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THE IMPACT OF BART'S BOND ISSUE ON REGIONAL PUBLIC FINANCING

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technical memorandum

The BART Impact Program is a comprehensive, policy-oriented study and evaluation of the impacts of the San Francisco Bay Area's new rapid transit system (BART).

The program is being conducted by the Metropolitan Transportation Commission, a nine-county regional agency established by state law in 1970.

The program is financed by the U.S. Department of Transportation, the U.S. Department of Housing and Urban Development, and the California Department of Transportation. Management of the Federally funded portion of the program is vested in the U.S. Department of Transportation.

The BART Impact Program covers the entire range of potential rapid transit impacts, including impacts on traffic flow, travel behavior, land use and urban development, the environment, the regional economy, social institutions and life styles, and public policy. The incidence of these impacts on population groups, local areas, and economic sectors will be measured and analyzed. The benefits of BART, and their distribution, will be weighed against the negative impacts and costs of the system in an objective evaluation of the contribution that the rapid transit investment makes toward meeting the needs and objectives of this metropolitan area and all of its people.

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THE IMPACT OF BART'S BOND ISSUE
ON REGIONAL PUBLIC FINANCING



AUGUST 1977

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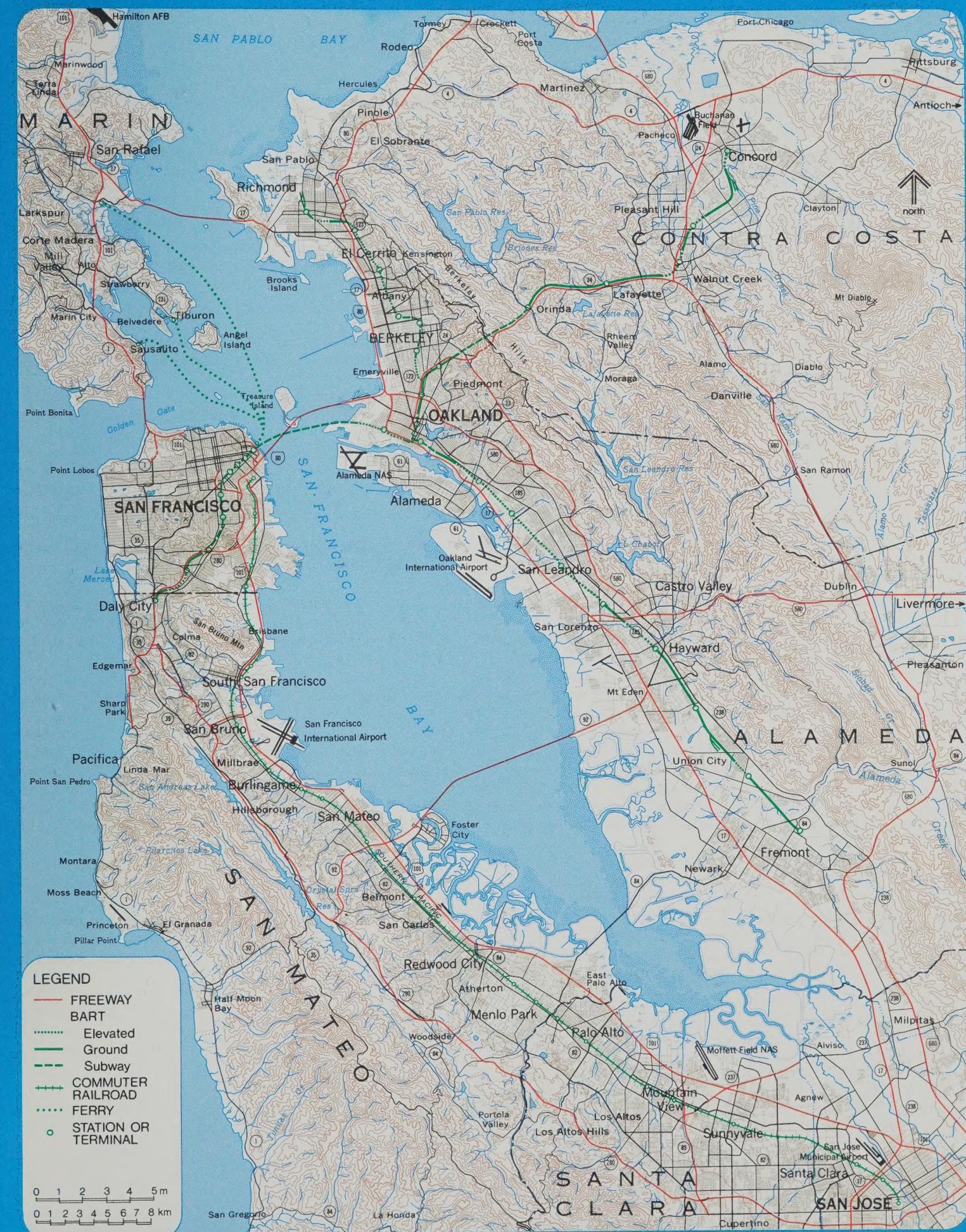
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16. Abstract This report documents the study of the impact of BART's General Obligation bond financing on the cost of public borrowing in the San Francisco Bay Area and the study of the magnitude of the debt on the financing of other public projects. The study comprises a statistical search to see if borrowing cost changes appear related to the level of BART debt, and a series of interviews and surveys among leaders in the municipal bond industry to see what, if any, impact they perceived in the 1962-1972 period. Methodology, results and findings are reported. The study concludes that BART had, at most, a slight, short, adverse effect on other local borrowing costs; that the adverse effect wholly disappeared by 1969 or 1970; that BART is viewed within the municipal bond industry as a positive, or at worst neutral, force in the economy of the Bay Area today. The study also includes a statistical search to see whether voter response was related to debt and tax levels. The study concludes that BART had no statistically supported or consciously per- ceived effects on decisions by either voters or policymakers relative to other, later public projects.		
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SAN FRANCISCO BAY REGION

CENTRAL AREA



BART: The Bay Area Rapid Transit System

Length:	The 71-mile system includes 20 miles of subway, 24 miles on elevated structures and 27 miles at ground level. The subway sections are in San Francisco, Berkeley, downtown Oakland, the Berkeley Hills Tunnel and the Transbay Tube.
Stations:	The 34 stations include 13 elevated, 14 subway and 7 at ground level. They are spaced at an average distance of 2.1 miles: stations in the downtowns are less than $\frac{1}{2}$ -mile apart while those in suburban areas are 2 to 4 miles apart. Parking lots at 23 stations have a total of 19,000 spaces. There is a fee (25 cents) at only one of the parking lots. BART and local agencies provide bus service to all stations.
Trains:	Trains are from 4 to 10 cars long. Each car is 70 feet long and has 72 seats. Top speed is 80 mph with an average speed of 38 mph including station stops. All trains stop at all stations on the route.
Automation:	Trains are automatically controlled by the central computer at BART headquarters. A train operator on-board each train can over-ride automatic controls in an emergency.
	Magnetically encoded tickets with values up to \$20 are issued by vending machines. Automated fare gates at each station compute the appropriate fare and deduct it from the ticket value. At least one agent is present at each station to assist patrons.
Fares:	Fares range from 25 cents to \$1.45, depending upon trip length. Discount fares are available for the physically handicapped, children 12 and under and persons 65 and over.
Service:	BART serves the counties of Alameda, Contra Costa and San Francisco, which have a combined population of 2.4 million. The system was opened in five stages, from September, 1972, to September, 1974. The last section to open was the Transbay Tube linking Oakland and the East Bay with San Francisco and the West Bay.
	Routes are identified by the terminal stations: Daly City in the West Bay, Richmond, Concord and Fremont in the East Bay. Trains operate every 12 minutes during the daytime on three routes: Concord — Daly City, Fremont — Daly City, Richmond — Fremont. This results in 6-minute train frequencies in San Francisco, downtown Oakland and the Fremont line where routes converge. In the evening, trains are dispatched every 20 minutes on only the Richmond — Fremont and Concord — Daly City routes. Service is provided weekdays only, between 6 A.M. and midnight. Future service will include a Richmond — Daly City route and weekend service. Trains will operate every 6 minutes on all routes during the peak periods of travel.
Patronage:	Approximately 130,000 one-way trips are made each day. 200,000 trips are anticipated under full service conditions.
Cost:	BART construction and equipment cost \$1.6 billion, financed primarily from local funds: \$942 million from bonds being repaid by the property and sales taxes in the three counties, \$176 million from toll revenues of transbay bridges, \$315 million from federal grants, and \$186 million from interest earnings and other sources.

January 1977

SUMMARY AND FINDINGS

As the first regional rapid transit system built in the nation in more than 50 years, the San Francisco Bay Area Rapid Transit System (BART) is a potential learning model for metropolitan areas now considering investments in transportation facilities. It is of additional interest to the federal government in allocating financial aid for local transportation improvements, urban development and environmental protection in urban areas. The BART Impact Program is designed to meet immediate needs for accurate information on the BART investment and to provide input for future transportation decisions in the Bay Area and throughout the nation.

The BART Impact Program is a comprehensive, policy-oriented study and evaluation of the impacts of the BART system. It covers the entire range of possible rapid transit impacts and includes major impact studies of the Bay Area's transportation systems, travel behavior, land use and urban development, the environment, the regional economy, social institutions and life styles, and public policy. The impacts are defined, then measured and analyzed by their effects on population groups, local areas and economic sectors. Finally, the benefits of BART are weighed against the negative impacts and system costs to arrive at an objective evaluation of the BART investment in meeting the overall needs and objectives of the metropolitan Bay Area and its people.

The Economics and Finance Project of the BART Impact Program was designed to contribute to the understanding of what impacts the construction and operation of rapid transit in the Bay Area have had on the region's economy and public finance.

The original cost estimate for BART was \$994 million for the three-county basic system, the trans-Bay tube, and the transit vehicles, plus \$6 million for financing costs (excluding interest). The financing plan proposed to finance these costs with \$792 million of general obligation bonds, \$135 million of toll revenue bonds and \$73 million of transit revenue bonds. The general obligation bond issue, and the interest on those bonds, was to be repaid over 30 years by a tax on the property of the three-county District -- Alameda, Contra Costa and San Francisco Counties.

The size of this local bond issue increased the bonded indebtedness of the region from 10 percent of the three-county District's assessed value to 25 percent in a single

election. Because of the size of the new indebtedness, there had been conjecture that one of BART's impacts was associated with the effect of its financing on other local financing costs or the willingness of the public or its elected officials to incur additional public debt for other public projects. The findings of this study address these potential impacts.

The magnitude of BART's bond issue had no impact on the cost of other local borrowing.

BART debt, just as any major local bond issue, could affect other local general obligation debt costs in two ways. First, because it represents an increase in the local tax burden, it could increase the risk of tax delinquencies and thus increase general obligation debt costs for other projects. Secondly, BART debt could have represented an infrastructure investment interpreted by the financial community as increasing the local ability to support general obligation debt. The second effect would increase the security of debt and offset, to some extent, the increased cost.

Both statistical analysis and interviews with key individuals in the municipal bond financing industry indicate that BART's bond issue was not responsible for increasing public debt costs to other borrowers. BART debt and other public issues were evaluated against the strength of the regional economy, rather than the region's indebtedness.

BART financing did not influence the financing options available to other public agencies.

The increase in public indebtedness -- and the associated taxes -- could have had one of a number of impacts on the public financing of other public projects. The increased level of indebtedness -- of which BART was a substantial element -- could cause taxpayer resistance to any additional bond issue, regardless of the merit of the project to be financed. Moreover, public officials, anticipating this voter reaction, could seek financing approaches for other projects which did not require a vote of the people, or could even defer projects altogether.

Statistical analysis of voter behavior failed to reveal a convincing relationship between the failure of bond elections and the level of public indebtedness. This statistical observation was confirmed in interviews with public officials and informed participants in the municipal financing industry, who could not cite a single instance between 1962 and 1972 when BART's debt represented the cause of a bond election failure.

The shift in California to the use of nonvoted debt was the result of a change in municipal financing practice, and was not BART-induced. In 1966, nonprofit corporation bonds were first marketed in public competitive bids. They became more price competitive and were used increasingly throughout the state, not just by public entities in the BART District avoiding voter rejection.

Interviews with public officials, reinforced by the findings of the Public Policy Project, failed to reveal any public projects which were deferred solely because of the additional burden of BART debt on the District's taxpayers.

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I. INTRODUCTION

As the first regional rapid transit system built in the U. S. in more than 50 years, the San Francisco Bay Area Rapid Transit System (BART) is a potential learning model for metropolitan areas now considering investments in transportation facilities. It is of additional interest to the federal government in allocating financial aid for local transportation improvements, urban development and environmental protection in urban areas. The BART Impact Program is designed to meet immediate needs for accurate information on the BART investment and to provide input for future transportation decisions in the Bay Area and throughout the nation.

The BART Impact Program is a comprehensive, policy-oriented study and evaluation of the impacts of the BART system. It covers the entire range of possible rapid transit impacts and includes major impact studies of the Bay Area's transportation systems, travel behavior, land use and urban development, the environment, the regional economy, social institutions and life styles, and public policy. The impacts are defined, then measured and analyzed by their effects on population groups, local areas and economic sectors. Finally, the benefits of BART are weighed against the negative impacts and system costs to arrive at an objective evaluation of the BART investment in meeting the overall needs and objectives of the metropolitan Bay Area and its people.

The Economics and Finance Project of the BART Impact Program was designed to contribute to the understanding of what impacts the construction and operation of rapid transit in the Bay Area have had on the region's economy and public finance.

This technical memorandum focuses on the impacts of BART's general obligation bond issue on the cost of borrowing and the financing of other projects. The decision to finance BART with local general obligation bonds may have had both short-term and continuing effects on bond interest rates, on the use of bonded debt to finance non-BART capital improvements, and on the fiscal behavior of local officials in areas not directly related to the use of bonded debt.

One conjecture is that the very size of the BART bond issue had the effect of increasing interest rates on public agency bonds throughout the Bay Area. A contrary conjecture is that the bond market perceived the investment in BART as an investment that would maintain the Bay Area's urban core which, in turn, made the entire region more creditworthy. If the region were deemed more creditworthy, it would experience lower interest costs on public debt.

Similarly, the BART bond issue could have had a deterrent effect on the willingness of public agency finance officers and elected officials to propose additional bond issues to finance non-BART capital improvements. The increasing use of nonvoted debt (e.g., revenue bonds or bonds issued by nonprofit corporations) that occurred during BART's construction period may or may not have reflected decisionmakers' perceptions of willingness of the electorate to approve additional general obligation bonds.

Finally, the existence of BART's bonds could have affected the willingness of decisionmakers to propose other capital investments. Under this hypothesis, municipalities or other local governments may have deferred or eliminated new investments, because of concerns about public sensitivity to expenditure levels and tax rates, some of which may have been caused by the BART bonds.

The object of this aspect of the research was to determine whether each of the above effects exists and, in the case of the impact of BART bonds on interest rates, to make a quantitative estimate of any such effects, if possible. The research strategy used to identify impacts on fiscal behavior occurs in two phases. First, a statistical analysis was carried out to determine whether changes in fiscal behavior and the response of the municipal bond market can be inferred from an analysis of data. Then, the statistical analysis was used as the basis for a program of interviews with financial decisionmakers in the Bay Area and in the regional and national bond markets, in order to identify the causes of anomalies identified in the statistical analysis. This two-phase approach assured that the interviews could be conducted within a factual framework.

II. THE RESEARCH APPROACH

BART itself was financed first and primarily from a \$792 million issue of general obligation bonds authorized by a 61.2 percent vote of approval in November 1962. These bonds are secured and are being paid from ad valorem property taxes in the three counties which compose the BART District.

This research approach was designed to identify whether the magnitude of this bonded indebtedness increased the cost of borrowing, caused voters to reject other bond issues or inspired local decisionmakers, in an attempt to avoid rejection by overburdened taxpayers, to pursue nonvoted indebtedness for other public projects. It also investigated whether public works projects had been deferred to avoid rejection at the polls.

A. Impact on the Cost of Borrowing

BART debt, just as any major local bond issue, could affect other local general obligation debt costs in two different ways. First, BART debt, because it represents an increase in local tax burden, could increase the risk of tax delinquencies and thus increase general obligation debt costs. Second, BART debt could represent a particular kind of infrastructure investment which increases the local ability to support general obligation debt. This second effect would increase the security of general obligation debt and offset, to some extent, the first effect.

Both of these effects are really perceptions which may or may not mirror reality. Whether the analysts or professionals were in rating agencies, banks, insurance companies, or underwriting departments, the same individuals or teams of analysts who appraised BART bonds appraised virtually all general obligation bonds in the BART counties. Their changing views of BART over time influence their views of other issues secured by the same tax base.

The research approach which was implemented sought to identify the impact BART's financing had on the perceptions of these municipal finance industry specialists and on the bond buyers' perceptions.

1. Theoretical Framework

In the marketplace, perceptions are evidenced by price. In the bond market, prices are expressed usually in terms of net interest costs or yield. A number of separate effects must be considered.

a. National Market

The municipal bond¹ market is, of course, only part of a much larger securities market which is, in turn, part of a much larger economic system. The relative position of the municipal bond market can be measured rather straightforwardly. Interest rates for grade AA municipal bonds are usually about 80 to 90 basis points (0.8 to 0.9 percent of the interest rate) below Treasury bill rates (T).

The borrowing costs for municipal issuers generally is reflected by the Bond Buyer 20-bond index (BB). The index reflects primarily national, rather than regional, economic concerns on a week-to-week basis. Most of the effect of changing national policies and markets can be screened from the index by relating it to the Treasury bill rate for the same period. The difference ($T_t - BB_t$) shows the attractiveness of AA-rated bonds relative to other investment opportunities at the same point in time (t).

For periods during which municipal bonds are perceived as unattractive relative to other securities, the basis point difference may drop as low as 60 to 70 basis points. For periods during which municipal bonds are perceived as more attractive, the difference in interest rates between municipal bonds and other securities may reach 100 basis points (or one percent of interest). The interest rate on any particular local bond issue is strongly affected by national market conditions expressed by ($T_t - BB_t$).

b. State Market

Another factor relating to the cost of a particular bond issue is the state market. Rating agencies, banks, insurance companies or underwriter departments will view a particular local issue in the context of the vigor of its state economy. Over the past decade, California bond issues have paid decreasing interest rates relative to the national market. This relative position of the California market can be found by comparing a California bond index (CB) to the Bond Buyer index. The difference ($BB_t - CB_t$) shows the position of the California bond market relative to the rest of the bond market.

The approach to relating local issues to national and state markets views the municipal bond market as a capsule floating in the sea of the economic system. The difference ($T_t - BB_t$)

¹The term "municipal bond" includes all local government bonded debt, not just the debt issues of municipalities.

measures the relative position of the overall municipal market in the sea. The difference ($BB_t - CB_t$) measures the relative position of the state market within the capsule. Any particular bond issue may be positioned by comparing the net interest cost bid (I_i) to the Treasury bill rate. The difference ($T_t - I_i$) measures the relative position of a particular issue.

c. Local Effects

Interest costs on local general obligation bond issues are affected by more than national and state markets. Some factors which, according to conventional wisdom, affect interest costs on a particular issue are the size of the issue and the ratio of direct and overlapping debt to the assessed value.

The size of an issue is important because it affects the number of bids. In a statistical study of the determinants of interest costs, it will be important to limit discussion to issues which have more than one bidder.

The ratio of debt to assessed value (D/AV) can be a measure of the extent to which taxes (or taxing capacity) have already been encumbered. BART debt did represent a substantial increase in debt ratios for local jurisdictions in BART counties. If BART debt has increased the cost of borrowing for other local purposes, the increase is likely to be because BART debt and tax subsidies were perceived as competing directly with other claims for tax support.

d. The Perception of BART as a Strong Improvement to Infrastructure

The appraisal of BART bonds themselves as a security also reflects on other general obligation bonds in the three counties. If BART bonds were viewed as strong investments, their presumed tax burden effect may be offset. The interest rate on BART bonds (both net interest costs and reoffer yields) (I_t^B) would reflect such strength.

e. The Statistical Model

The following model for bids on local bond issues in the three BART counties reflects these forces.

$$(T_t - I_i) = f\{BB_t - I_t^B, (D/AV)_k, (BB_t - CB_t)_k, (T_t - BB_t)\}$$

where:

T_t is the Treasury bill rate for week t .

I_i is the net interest cost bid for issue i.

I_t^B is an index of BART interest rates and reoffer yields for week t.

$(D/AV)_i$ is the ratio of debt (direct and overlapping) to assessed valuation.

BB_t is the 20-bond Bond Buyer index for the week t.

CB_t is a California bond index (to be constructed) for week t.

What were the expectations from this model?

- The California and national market variables would account for most of the variation in interest rates;
- The debt ratio would be inversely related to the relative strength of a local bond issue; and
- BART's relative strength would be positively related to the relative strength of a local issue.

The statistical analysis involved three steps:

- Data were collected from sources including the Bank of America and other underwriters of municipal bonds;
- The data were arrayed in graphic form and a simple statistical correlation analysis was completed; and
- Specific time periods and bond issues from the data arrays and statistical studies were selected to discuss in interviews.

Although the results of simple correlation analysis indicated additional statistical analyses were not warranted, regression analysis was undertaken. No satisfactory regression equation was developed that related bond interest rates (or basis point spreads) to variables such as the ratio of debt to assessed value. Had the regression analysis revealed a statistically sound relationship, the regression equation could have been used to estimate quantitatively the true impact of the BART bonds -- the difference between the impact of BART's debt and the debt which would be associated with the transit system likely to have occurred in the absence of BART (the No-BART Alternative).¹

¹See "Rationale and Specification of the No-BART Alternative," a working note prepared by the Metropolitan Transportation Commission, September 1976.

The study of the BART bonds' impact on the cost of borrowing was to be carried out in two parts. Based upon the results of the statistical study, underwriters in the investment community were to be interviewed about the interest costs associated with particular bond issues and the relationship of BART to those issues.

2. The Statistical Base

The analysis began with statistics on 617 bond issues sold in the Bay Area from 1962 to 1972. Issues differed in purpose, security, length to maturity and method of sale, any of which may have affected the net interest cost.

The data used for the statistical analysis were organized in five major files. These files include data on each issue, on market conditions, demographics and tax rates. These files are in the possession of the Metropolitan Transportation Commission. The files are fully documented in Appendix A.

The five files contain information relating to municipal bond market conditions in the three BART counties (Alameda, Contra Costa and San Francisco), as well as two non-BART Bay Area counties (Marin and San Mateo) over the 11-year period, 1962-1972. This period includes the seven years from 1963-1969, during which the 12 series of the BART District's \$792 million general obligation bonds were issued. The data pertained solely to general obligation or tax increment bonds issued within these counties. Accordingly, data on revenue bonds and other nonvoted debt are not included in these files.

Basically, the Issue File describes various characteristics of the bond issues and issuers within the counties, such as the "net interest cost" (NIC) rates and par values of the local bond issues, as well as the level of existing debt and assessed valuation of the issuing districts.

The Market File contains data on various interest and inflation rates, as well as the reoffer rates of the BART bonds over the period of the study. These national and state bond rates may be used for comparison with the particular net interest cost rates of the local issuers.

The Voter File contains data on the property and sales tax rates, income, population and nonvoted debt. Its purpose is to assemble various factors which may have influenced voter behavior with regard to local general obligation bond measures.

To some extent, these variables are reflected in bond ratings, although imperfectly. The reports of bond sales evidence a

substantial weekly divergence in net interest cost among similarly rated California bond issues. It was hoped that with a large enough array of data, differences in net interest cost attributable to differences in ratings would not be significant. Statistical analysis of the data neither supports nor counters this expectation.

No statistical base was constructed to measure the periodic changes in buyer demand for California municipal bonds. This may be a serious statistical shortcoming of the study. However, it is difficult to identify the principal sources of demand for such bonds, and impossible to quantify the total demand for each period of time. Indeed, the character of demand for tax-exempt securities changes markedly from year to year. For instance, if insurance companies enjoy favorable claims experience, they will buy tax-exempt bonds aggressively. If banks have large sums of deposits to collateralize, they also will enter the municipal market. If individuals in high tax brackets find that common stocks no longer provide a ready road to capital gains, they also will come into the bond market.

3. The Interview Process

Did BART or BART debt raise or lower the net interest cost for other BART county issuers, and if so, by how much and when? The interview process was designed to gain the judgment of individuals who influenced the interest costs of other issues to explain the reasons for the changes in borrowing costs identified in the statistical analysis.

The terms involved -- BART, BART debt or debt ratio, net interest cost and BART county issues -- were all familiar to the people to be interviewed. The interviewing plan, therefore, needed only to display available data in a form which would focus discussion on what happened and discourage argument over whether or not it should have happened. It did not need to explain the bond market. The data collected and displayed for discussion included the following:

- The average interest rate bid for every reported competitive bond sale in five Bay Area counties over the 1962-1972 period. Data were limited to general obligation and other tax-supported bond issues.
- The BART debt and total debt ratios for each issue. Debt ratios are expressed as a percentage of assessed valuation. Currently, in California, assessed values average about 25 percent of the fair market value of property subject to taxation, but this was not always true.
- State and national money and municipal market indicators, including a California bond index, the Bond Buyer's

20-bond municipal index, and the yield on three-month Treasury bills.

- Reoffering yields for various BART bonds on the 1992 maturity. These are the yields based on the price asked in the secondary market.

The emphasis on tax-supported issues focuses on the overall economic vitality of the issuing area, not on the adequacy of particular service charges pledged to pay the bonds. The emphasis on competitively sold issues omits few issues. Under California law, few issues can be sold by negotiation unless there has been a bid competition, with all bids rejected. Negotiated placements usually occur only when the issue has some peculiar marketing problem which has to be resolved in the negotiating process.

The data were arrayed in simple exhibits which summarized annual averages of interest costs and debt ratios. These arrays showed that while BART had a major impact on debt ratios, the interest bids on BART county issues were very similar to the non-BART county issues. The arrays are illustrated in the interviewing plan contained in Appendix C.

4. Framing of Hypotheses

BART either lowered interest costs because it was viewed as a positive infrastructure investment or it raised interest costs due to the high debt burdens it created. These potential effects were formulated into a number of hypotheses:

- BART may have had different effects over time, depending upon the good or bad publicity it was receiving.
- BART's effect depended, to some extent, on the problems BART encountered in financing capital and operating costs.
- BART, because it was a rail transit investment, may have been viewed with particular favor by New York municipal specialists, whose primary mass transit experience is rail.
- BART's debt ratios may have had a particularly bad effect on bond costs in the nonurbanized areas.
- BART's financing and operational difficulties were not uncommon and did not affect the basic security of its own debt or the debt of other issuers.

Review of these hypotheses by members of the municipal bond community represents the substance of the research approach. The statistical analysis provided merely the framework for discussing these hypotheses.

5. Design of Questionnaire/Interview Form

The form was intentionally designed for use either in direct personal interviews or in self-quizzing surveys. The freedom to use either an interview or a survey approach proved essential. Unlike a public opinion survey, in which respondents are selected randomly from the public as a whole or from defined classes, in this survey, it was necessary to reach a handful of specific individuals selected for their particular expertise. The personal interview often proved an impossible intrusion into working time. The survey created the option of responding in free moments or at leisure. Of the 12 people approached, nine responded. Two of these declined to be interviewed as a matter of company policy. The interviewing form is contained in Appendix C.

6. Respondents

The seven individuals interviewed represent several facets of what is broadly referred to as the municipal bond industry. This section describes their professional responsibilities. It should be recognized that this is not a statistically sound sample, nor is it intended to be. It involves interviewing key decisionmakers in the municipal financing markets who influence the cost of borrowing.

- Albert Maas headed the consulting department of Blyth & Company's San Francisco office from 1959 to 1965. As a consultant, he has typically viewed bond issues in the formative stage and paid greatest attention to the initial reception of bonds by new issuers. Since retiring from Blyth in 1966, he has continued in consulting on the staff of Stone & Youngberg Municipal Financing Consultants, Inc. He is known in the industry for broad-ranging knowledge of trends and developments in the bond market, applied as a consultant, and initially gained as an underwriter from 1925 to 1959.
- Alan V. Bartlett carefully charted the performance of California 20-year bonds for many years. He was director of the Bank of America's municipal bond research department, from 1962 to 1971. Retired since 1971, he has continued to serve the bank as a consultant. Typically, he has advised municipal issuers during the project planning period, and provided research data supporting the bank's initial purchase of bonds.
- Hyman Grossman, Vice President of Standard & Poor's Corporation, has been active in analyzing municipal issues for rating purposes, including several BART and

many other Bay Area issues. He is a senior spokesman for Standard & Poor's Corporation, whose ratings are accepted widely by individual investors, underwriters, and portfolio managers as a guide to quality. Bond ratings are typically established one to two weeks ahead of a proposed bond sale, but are based on continuous credit evaluation and familiarity with the underlying economy.

Three senior decisionmakers in the underwriting and trading side of the industry were interviewed for this study. They are the individuals who direct their firms' principal West Coast trading desks, line up buyers, and place capital at risk. Financing consulting, investment analysis and bond ratings come to a focus and are tested at the trading desk. In a typical municipal bond bidding situation, net interest costs are finally set on the basis of immediate marketability. That is, bonds have to be priced to sell so far as possible within the week of purchase. Typically, a sale is considered to have a good chance of success only if half or more of the issue is sold on the day of purchase. Between the time the bids are opened and the close of trading, about 2:00 PM, Pacific Standard Time, the traders have to close their sales. Their assessment of the market for any bond is critical, immediate and often decisive in the setting of net interest cost.

The traders interviewed were:

- Milton Reiner, First Vice President, Blyth, Eastman, Dillon & Company, Inc., manager of the San Francisco office;
- Albert Blaylock, Vice President, Bond Department, United California Bank, Los Angeles; and
- John Tresch, Regional Manager and Assistant Vice President of the Los Angeles office of Merrill Lynch, Pierce, Fenner & Smith, Incorporated.

Although the relative activity of the three firms with which these interviewees are involved differs from year to year and region to region, all are major participants in managing municipal bond issues. The ranking of the firms in 1976 is illustrated in Table II-1.

These three firms, along with the Bank of America (currently ranked as number 21), comprise the four largest underwriters of municipal bonds with major commitment authority on the West Coast. The individuals interviewed therefore have a major voice in marketing decisions on Bay Area bond issues.

The final interview was performed in order to obtain a professional buyer's view of the impact of BART financing.

Table II-1
NATIONAL RANKING OF RESPONDENTS' FIRMS
BY VOLUME OF ISSUES UNDERWRITTEN

<u>Rank</u>	<u>Firm</u>	<u>\$ Underwritten</u>	<u>Number of Issues</u>
1	Merrill Lynch	\$1,286,239,000	321
4	Blyth Eastman Dillon	857,934,000	172
22	United California Bank	294,198,000	75

Source: Economic Research Department, Securities Industry Association, October 1976 Bulletin.

- S. M. Pellett recently moved to New York to become vice president of Bessman Trust Company, N.A. Before that move, he managed the municipal bond portfolio of Fireman's Fund Insurance Company, which holds over \$20 million in BART bonds, and many other Bay Area securities. His experience in evaluating Bay Area bond purchases covers the period 1965 to 1975.

Table II-2 summarizes the characteristics of these seven respondents. It is drawn directly from the interview form, and shows both the questions asked and the answers given.

Although the respondents are all senior spokesmen within their firms, their responses have been sought and given as individuals. That is, nothing said or unsaid is to be taken as an opinion, conclusion or evaluation by any respondent acting in an official capacity or on behalf of his firm. Any effort to attribute responses to any firm would violate the spirit of courtesy and candor essential to this survey of recollections and impressions.

The people contacted stand in excellent positions to observe BART's fiscal impact. They have research resources at their disposal, and have been in daily contact with the bond market throughout the study period. However, except for the research director, Alan Bartlett, the respondents are not prone to theorize. Their orientation is pragmatic -- how do issues actually trade? -- not hypothetical -- why do issues trade as they do?

Table II-2

CHARACTERISTICS OF INTERVIEWEES

Respondent Identity Code						
1	2	3	4	5	6	7
1. What was your role in evaluating bonds issued by Bay Area entities?						
Underwriter/ trader	Underwriter/ trader	Underwriter/ trader	Bond analyst (ratings)	Bond analyst/ portfolio manager	Bond analyst/ financial advisor	Financial advisor
2. Have you evaluated/marketed a BART general obligation bond?						
Yes	Yes	Yes	Yes	Yes	Yes	No
3. If yes, when, and do you recall your specific advice?						
(a) All issues, Well secured declining marketability	1963 "AA"			Bought over \$20MM	Well secured	--
4. Would you amend that advice in light of what you know about BART today?						
No	Yes, down- grade for buyer re- sistance	Yes, lower because of Moody's rating	No	No	Yes, limited secondary (resale) market	--
13						
5. Have you evaluated/marketed tax-supported bonds issued by other public entities in the Bay Area?						
Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Which specific issues do you recall, and in what year?						
(b) 1954- Present	All East Bay 2 SF g.o. issues	SF-Oakland	EBMUD, SF 1975, various lease- revenues	EBMUD Fremont Newark	(b) 1962-1971	(b) 1922-1966
9. How many people in your firm evaluated Bay Area Securities from 1962-1972?						
5 to 8	3	8	4	6	4 to 8	5 to 8
10. How many years, on the average, did they evaluate Bay Area securities?						
5 or 6	10	10	4 or 5	3	6	5 or 6

(a) No specific recollection.
(b) Too numerous to list.

Source: Bartle Wells Associates

Today, with over \$2 billion of municipal bonds coming to market each month (about twice the 1962-1972 level), banks and underwriters have to set priorities on where they will expend marketing and analysis efforts. The research departments and bond traders have a lot to say about which bonds can be marketed readily. Their decisions are crucial and their opinions respected.

The results of the interviewing process are documented in Appendix D.

B. Impact on the Financing of Other Public Projects

The late 1960s and early 1970s were characterized by increasing property taxes from modified assessment practices, increasing local commitment to social and welfare programs, and the impacts of inflation on the costs of government services. The impact of BART taxes on public attitudes toward spending, then, must be isolated from a general public frustration with increasing tax burdens. Since BART taxes were a highly visible and easily identified additional burden, they could easily be held responsible for any voter or taxpayer reaction to increased spending.

The research questions posed in this study include whether BART taxes affected the willingness of public officials to propose general obligation bonds to the voters or to propose other spending programs unrelated to bonded debt. To answer these questions, the signals provided by the public to policymakers -- through voting results on bond issue elections -- have been reviewed.

Bonds to be paid wholly from property taxes most directly challenge the voter to weigh his view of the project against his innate resistance to higher taxes. This would support the view that voters respond to higher taxes by turning down bond proposals. The research approach attempted to define BART's involvement in this reaction.

1. Statistical Analysis

The principal data used in this analysis were a listing of bond elections and election results from 1962 through 1972 in the three BART counties and two non-BART counties (for purposes of comparison). County Registrars of Voters provided the information. Table II-3 reports the number of elections in each county on which vote tallies were available.

The absence of complete data on all elections stems from the fact that the County Registrar of Voters is not responsible

Table II-3
BOND ELECTIONS IN BART AND CONTROL COUNTIES
1962-1972

15

County	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	Totals
Alameda	4 *	4 *	6 *	3 6	9 9	4 8	7 11	5 6	11 11	3 6	8 8	64 reports out of >79 total
Contra Costa	2 *	0 *	4 *	0 9	4 8	7 9	2 13	2 5	10 10	1 4	3 3	35 reports out of >67 total
Marin	1 *	8 *	13 *	5 6	4 6	15 16	3 7	2 4	5 10	1 5	2 9	59 reports out of >85 total
San Francisco	2 2	0 0	6 6	2 2	2 2	1 1	5 5	3 3	5 5	4 4	3 3	33 reports out of >33 total
San Mateo	7 *	15 *	13 *	8 10	7 10	9 10	10 12	7 7	6 7	0 1	4 4	86 reports out of >96 total
Five counties	16 *	27 *	42 *	18 33	26 35	36 44	27 48	19 25	37 43	9 20	20 27	277 reports out of >360 total

*The total number of bond elections in 1962, 1963, and 1964 was not reported, but evidently equals or exceeds the number of elections for which results are reported.

for recording results on those elections which cities conduct themselves. However, all county, school district and special district (i.e., water, sewerage and other public utility type district) bond elections are conducted by the county. Further, all elections in the City and County of San Francisco are recorded by the County Registrar of Voters.

It is clear from Table II-3 that the data provided by the County Registrars of Voters cover a very large percentage of all bond elections held in the five-county area from 1962 through 1972.

The vote count was used to calculate a ratio of yes-to-total votes cast, a type of approval ratio. From this ratio, three indices were created:

- INDEX 1 = $\frac{\sum (\text{yes votes})}{\sum (\text{total votes})} \times (\$ \text{ par value of proposal})$

The sum is taken over all proposals brought to election in a county in a year. Hence, for the period 1962-1972, there are 11 values for each of five counties. This index has values from zero to one. Two other variations were also tested.

- INDEX 2 = $\frac{\sum (\text{yes votes})}{\sum (\text{total votes})} \times \$ \text{ par value of proposal}$

- INDEX 3 = $\frac{\text{Index 2}}{\sum (\$ \text{ par value of proposal})}$

In the statistical analysis, annual sales and property tax collections in each county were used as a measure of local tax burden when the relationship between tax burden and voter response was explored (see Appendix B).

2. The Interview Process

The purposes of the interview process were to check independently the statistical work and to explore particularly the policy considerations which underlay the issuance of nonvoted bonds. As with the interview program on the impact of the bond issue on the cost of borrowing, it is important to recognize that the collective judgment and experience of key informants is as important as a pervasive interviewing program.

The interview process was designed to make use of a list of nonvoted bond issues to provide recollection of what bonds

were issued without formal voter approval, and to lead to questions about why these projects were chosen for nonvoted financing.

The interview form used appears as Appendix E. The forms were used as a conversation guide, and were not filled out during the interview itself. The interviewer was free to pursue points as they came up during discussion and, eventually, to introduce the question of whether or not BART influenced voter response or policy decisions.

Persons interviewed were taken from a list of policymakers, which appears as Appendix F. Six of the policymakers (who prefer confidentiality) were interviewed -- two each in Alameda and Contra Costa Counties, and one each in San Francisco and Santa Clara Counties. The results obtained were totally consistent with each other and with the interviewer's direct observations over the past six years. However, as additional background, as well as an independent source of observations, the interviewer had previously obtained a report from Evan R. Peters, a public relations consultant expert in bond approval campaigns.

Mr. Peters had frequently helped clients of Bartle Wells Associates, and several other municipal financing consultants, to plan public information releases. In addition, he frequently serves citizens' committees with detailed election planning and media campaigns. Though less well-known than his counterparts on the national scene, he has been directly and continuously active in local agency elections over a period of 25 years. His report covers 14 specific bond propositions in the Bay Area. His report, contained in Appendix G, is based on his personal logbook, and states as succinctly as decency allows, why various issues passed or failed.

Between Mr. Peters' report and the interview process itself, the interviewer obtained notes on 25 specific elections and seven nonvoted bond issues covered by the bond issue data compiled for the study.

All interviews were conducted by Raymond K. O'Neil, Vice President of Bartle Wells Associates. Mr. O'Neil's professional role since 1971 has been to advise public agencies on financing options, assist them in evaluating bond election prospects, and design and market both voted and nonvoted bonds. The decision on whether or not to submit a project to the test of a two-thirds approving vote is obviously very critical in the process of planning any public project in California.

Mr. O'Neil has recommended bond elections on one library, one public safety structure and one library since 1971, totaling about \$410 million in bonds. All passed, and are among no more than six or eight such successful financings for public buildings in California during that period. He has also designed and marketed bond issues for about \$100 million of public buildings through lease-rental revenue bonds during the same six-year period. Thus, Mr. O'Neil is himself familiar with the influences on the form of debt used by public agencies.

III. THE IMPACT OF BART BONDS ON THE COST OF PUBLIC BORROWING

Regardless of the real complexities of the bond markets, there will be conjecture that any substantial increase in outstanding debt will cause interest rates to rise. This was certainly a concern which was addressed by the Composite Report, which was the description of BART and its potential effects, that was presented to the public at the time the bond issue was on the ballot in 1962:¹

"To attempt to evaluate quantitatively the effect of this additional debt on bonds to be sold in the future by cities, counties and school districts in three counties would be extremely difficult, if not impossible. Taken by itself, however, this increase in debt would probably have the effect of increasing interest rates somewhat on these future bonds, although not actually preventing sale of bonds by agencies in the three counties.

"We would expect little effect to be noted on bonds of San Francisco, Oakland, East Bay Municipal Utility District, and other large agencies with well established credit. More effect will be noted on bonds of smaller agencies and on those with less well established credit ratings. The upper limit of the increase in interest rates which might result from the increase in overlapping debt is expected, in our opinion, to be generally about 1/2 of 1 per cent and only a relatively few agencies would find their financing costs increased this much."

This section describes the conclusions from the statistical analysis and interviewing program designed to measure the actual effect of BART's bond issue on the cost of public borrowing.

A. The Impact on Financing Costs

BART financing was a major component of all debt secured by property taxes in BART counties. Although its contribution to debt was negligible through 1963, by 1969, BART debt averaged about 40 percent of the total debt in Alameda County, 45 percent of the debt in Contra Costa County and 75 percent of the debt of the City and County of San Francisco. The size of BART debt in relation to debt of less-than countywide issuers

¹ Bay Area Rapid Transit District, "The Composite Report, Bay Area Rapid Transit," May 1962, p. 63.

varied widely, but the countywide figures give a sense of the magnitude. Figures III-1 through III-5 show the countywide ratios from 1962 through 1972.

Figure III-6 shows that in 1969, which coincidentally was the peak of BART general obligation debt, short-term money rates rose to their peak. One year later, in 1970, long-term municipal bond rates also peaked. The effect of BART debt as a cause of increased borrowing cost, if it were ever visible, certainly would have grown less so by 1970. Furthermore, as the cost of money rose from 1967 to 1970, both the supply and demand sides of the municipal bond market were affected.

Issues were withheld or withdrawn from the market because issuers could not or would not pay high interest rates. At the same time, profits, disposable personal income, bank loans and insurance deposits were constrained. Without income to shelter from taxation or funds to secure with high-grade municipal bonds, the market for municipal bonds shrinks quickly. That observation was confirmed in December 1974 and October 1975 when municipal bond yields went on to even higher highs than in 1969. Banks reduced their purchases of municipals, becoming net sellers; insurance companies were unhappily offsetting any operating profits with investment losses, and the bond market became a haven for individual investors seeking a tax-exempt alternative to increasingly volatile corporate and utility bonds.

History did not repeat itself exactly in 1974 and 1975. The municipal bond peaks then were caused in part by a very large volume of tax-exempt pollution control financing, most of it behind the veil of negotiated placement, in which bonds are placed with investors without reaching the market. As a result, the 1974-1975 bond market does not provide a statistical base by which to index the effect of high money rates on the demand for municipal bonds. The supply side of the market was swollen simultaneously.

The research approach was designed to address the question of BART's impact on the market, market pressures and, ultimately, the cost of borrowing by going directly to the source -- the point in the process at which market pressures are translated into bond prices, the trading desk.

Whatever the cause, bond prices are eventually resolved at the trading desk. Three of the people interviewed traded actively, and usually as department managers from 1962-1972. If buyers were enthused or concerned about BART of high debt ratios, the issues would be raised at the trading desk. Apparently, the issue was seldom raised and little discussed.

Figure III-1
MEAN DEBT RATIOS AND NET INTEREST COST (NIC)
ALAMEDA COUNTY

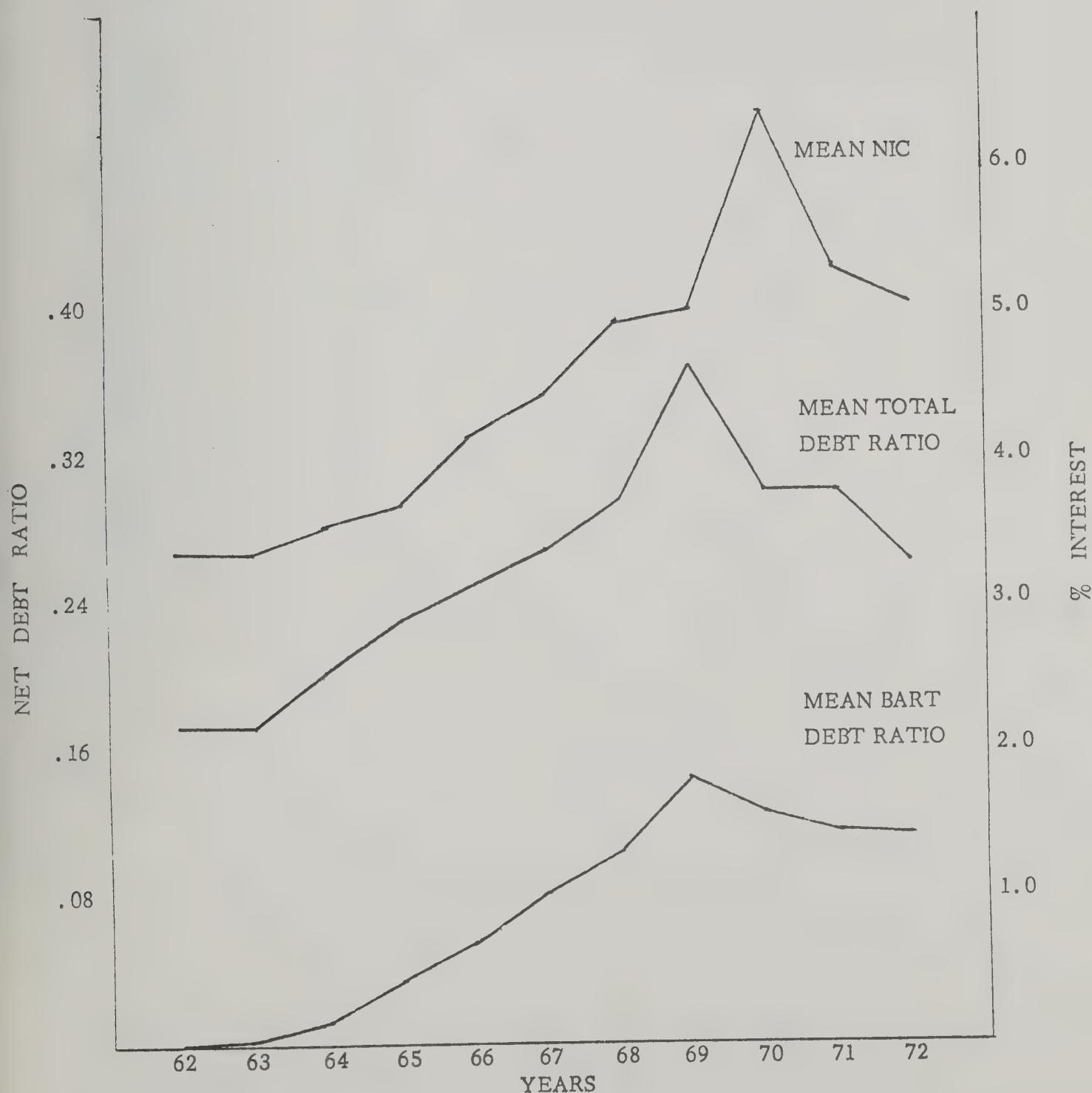
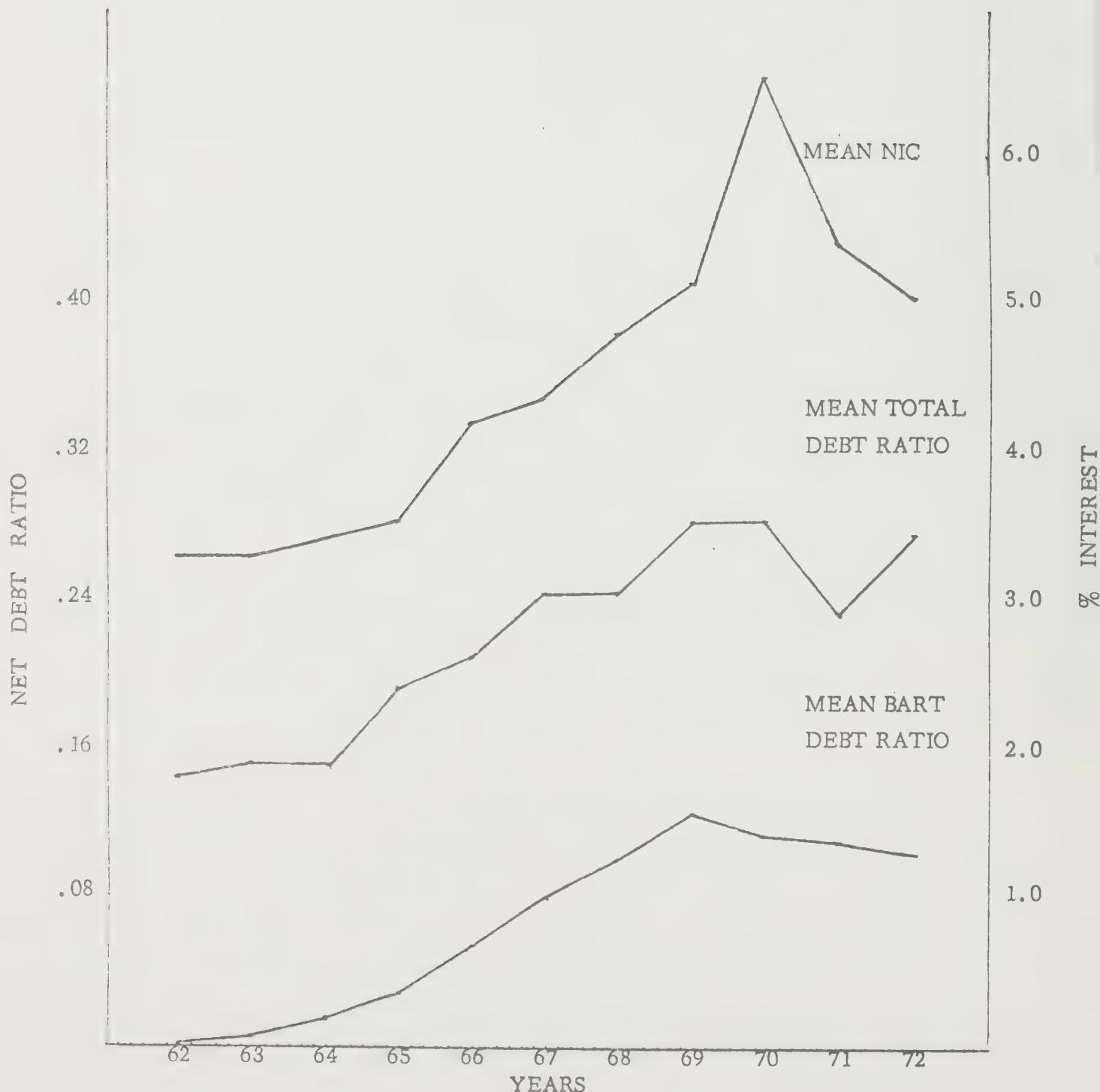


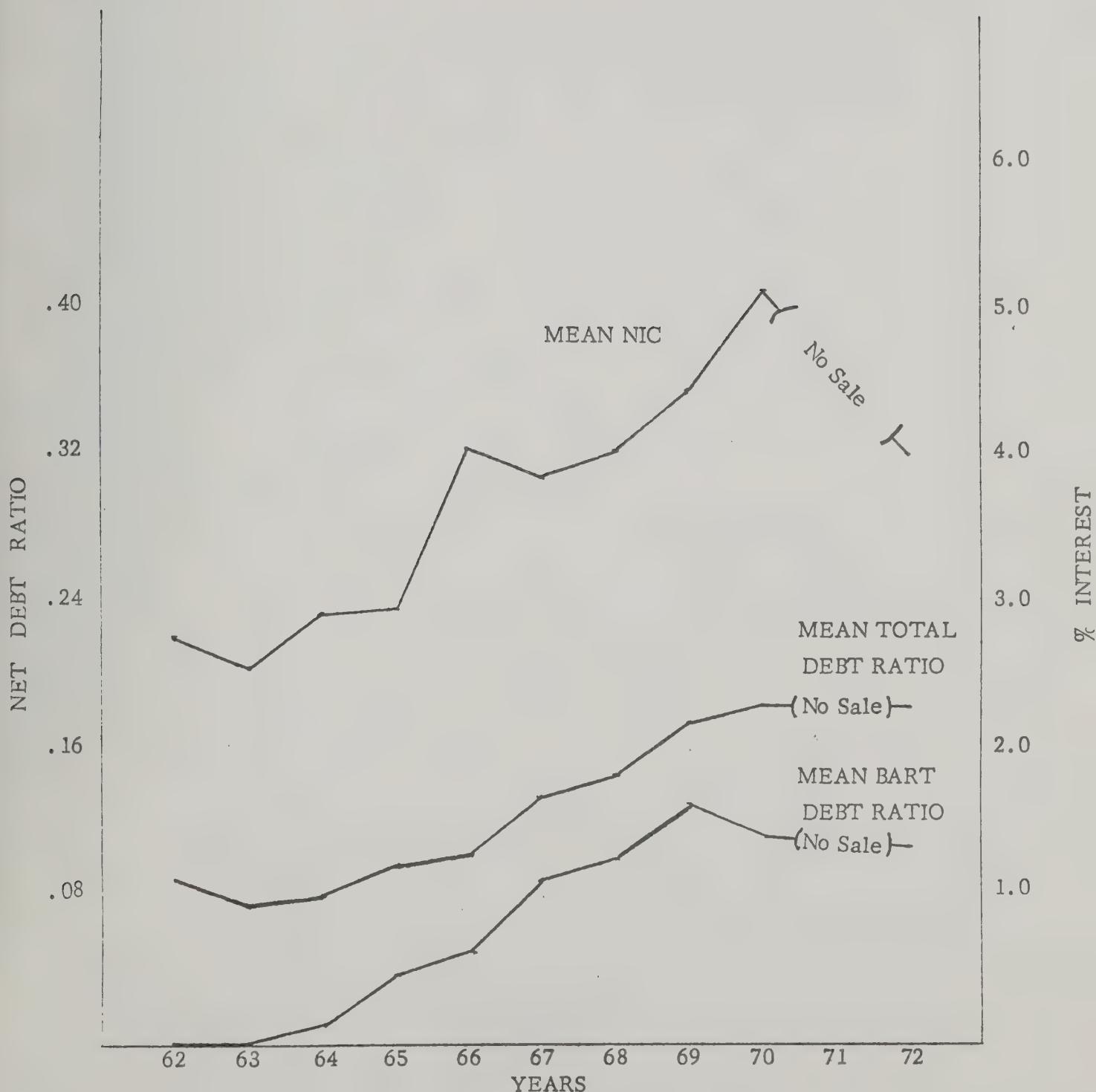
Figure III-2
MEAN DEBT RATIOS AND NET INTEREST COST (NIC)
CONTRA COSTA COUNTY



Source: Bartle Wells Associates

Figure III-3

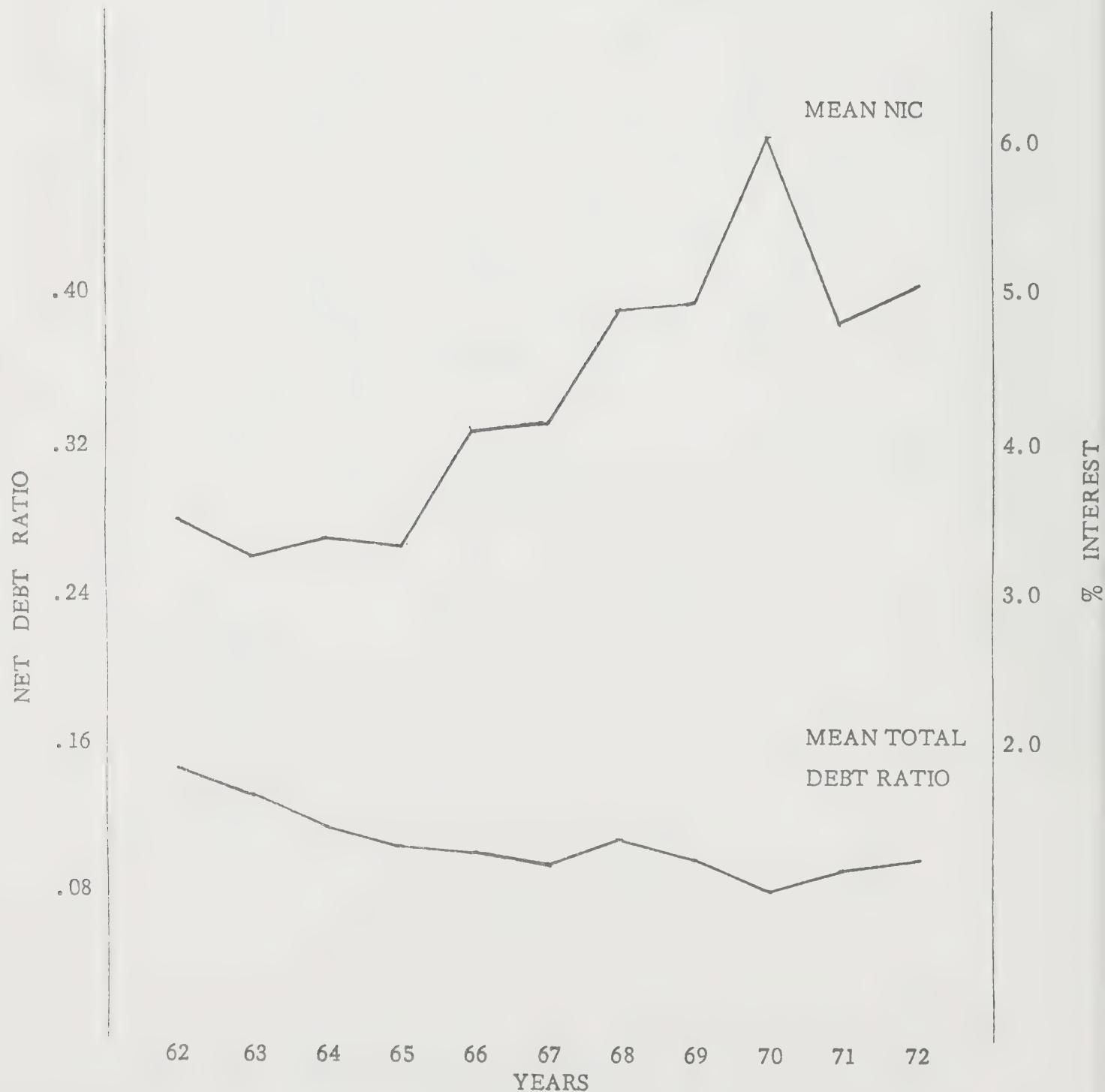
MEAN DEBT RATIOS AND NET INTEREST COST (NIC)
SAN FRANCISCO COUNTY



Source: Bartle Wells Associates

Figure III-4

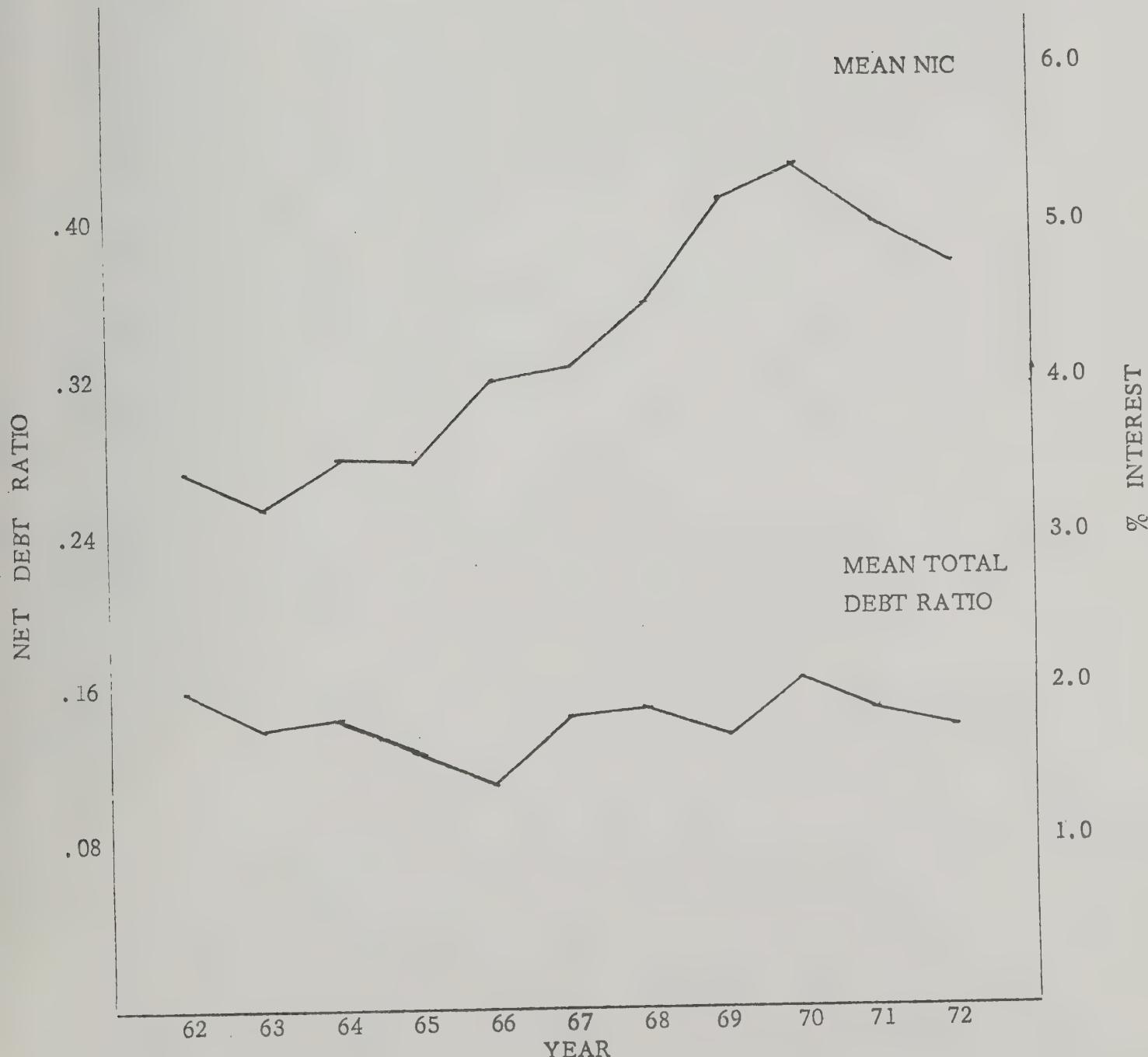
MEAN DEBT RATIOS AND NET INTEREST COST (NIC)
MARIN COUNTY



Source: Bartle Wells Associates

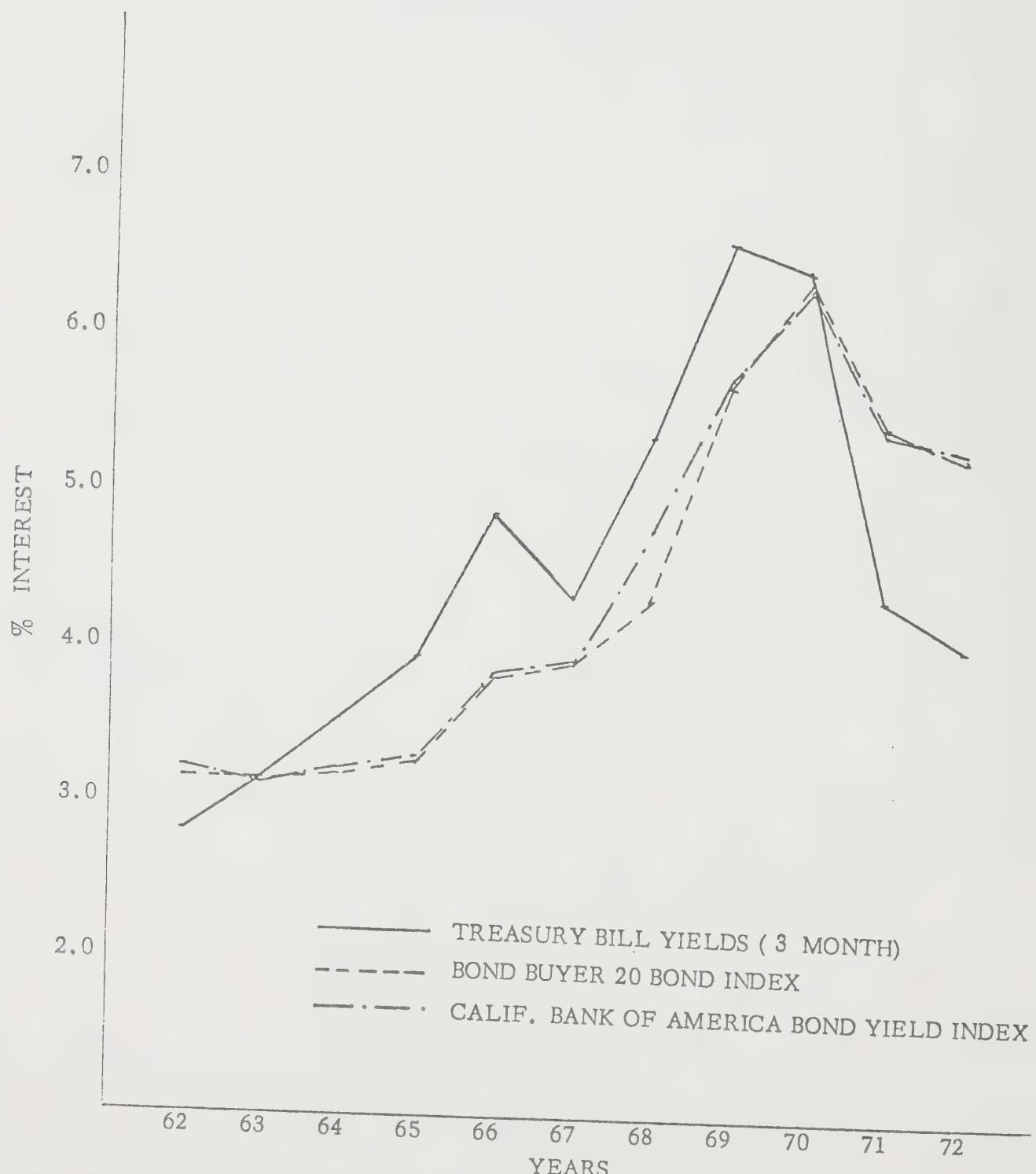
Figure III-5

MEAN DEBT RATIOS AND NET INTEREST COST (NIC)
SAN MATEO COUNTY



Source: Bartle Wells Associates

Figure III-6
MEAN MARKET INDICATORS



Source: Bartle Wells Associates

The presence of BART was apparent in the debt ratio, which is almost always published as part of the initial bond offering. It was undoubtedly considered by the major rating agencies, which not only did not downgrade BART county issues at the prospect of BART, but rapidly upgraded the suburban areas which grew during BART construction. BART was also evident to bank analysts and portfolio managers, especially those who crossed the planks over Market Street subway excavations.

Yet, not one of the persons interviewed or surveyed would venture to say that BART had more than a brief, hardly perceptible impact. Aside from the three traders interviewed, all of the others interviewed study the municipal bond market daily and, during the 1962-1972 period, were in continual contact with traders, analysts or portfolio managers. A project as big and as visible as BART would not pass without comment if, in fact, its impact was perceptible.

The interviews did not quantify BART's fiscal impact, but did say clearly and unequivocably that any quantifiable impact should be small and of short duration. The interviews strongly suggest that BART's fiscal impact began no earlier than 1964 and probably got lost in the onrush of other economic concerns by 1969. The one person who ventured to state a number put the upper limit at 10 basis points, i.e., 0.1 percent of additional interest cost.

B. Statistical Findings

The statistical analysis contained in Appendix B sought to establish a relationship between net interest cost and the burden of BART debt. There was insufficient statistical support from the regression analysis to prove or disprove this conjecture of a 0.1 percent increase in additional interest cost.

Although the statistical analysis, presented as Appendix B, postulates that bond grade may be the missing variable which resolves statistical differences, there is, in fact, no evidence one way or the other. Outside of the City and County of San Francisco, the very large majority of bond issues recorded were school bond issues by areas in varying stages of growth, but similarly rated. However, school bond issues tend to vary widely in length to maturity. This has been especially true since interest rates started to rise rapidly in 1967. The rise caught many school districts with authorized bonds limited to the five, six or seven percent maximum interest rates allowed by law when the bonds were voted. In order to sell the bonds in a market of much higher interest rates, the bonds had to be limited to short maturities. Depending on the interest rates allowed by law when the bonds were voted, one school district might offer

bonds for five years, while its neighboring district would offer them for 15 years. The impact on interest rates would typically be 0.3 to 0.5 percent, even if identically rated issues were sold at the same time.

Except for verifying that net interest cost may have been positively related to debt ratio, the statistical analysis produced little evidence of causal relationships. The interview/survey process was designed, therefore, to stand as much as possible on its own. Arrays of data and trend lines were developed to focus discussion.

The statistical analysis also compared reoffering yields on BART bonds with the reoffering yields on A-rated bonds of other California issuers. The supposition was that BART's 1991 bonds (rated Aa) would sell to yield somewhat less than the A-rated 20-year bonds which compose the California index. If the spread between BART bonds and the index narrowed, it would be evidence that BART bonds were being downgraded by the market, in spite of their superior ratings. Reoffering yields on BART bonds were expected to mirror market appraisal of BART's own creditworthiness.

In fact, the data available on BART reoffering yields are inconclusive. The data which appear in Table III-7 show that BART 1991 maturity bonds were reoffered in only 91 of a possible 120 months. In most of these months, only one to three resales were reported. There is no consistent relationship or trend between reoffering yields on BART bonds and the California Index. The one thing that does stand out is that BART bonds rarely sold to yield less than the bonds in the California Index, even though BART bonds were of superior investment grade. Investors appeared skeptical about investing in a large public works project, both at the outset, when operation was to be many years off, and later, when commencement of system operation was indefinite.

C. The Cause of the Fiscal Impact

To gain some sense of whether a BART-type project might again have a similar fiscal impact, however slight, the underlying causes have to be examined. The interview tested many possibilities -- economic impact, debt ratios, biases for and against rail rapid transit, and adverse press coverage.

Overall, the bond industry experts who were contacted view rail rapid transit positively or at least open-mindedly. They are familiar with, and strongly aware of, press criticism, which rose sharply about 1964 and continues to follow BART today. They are fully aware of BART's impact on debt ratios,

Table III-7

RELATIONSHIP BETWEEN BART REOFFER YIELDS
AND CALIFORNIA INDEX

Year	BART Reoffering Yield ¹	Number of Months of Data	California Index ²	CA Index - BART Reoffering Yield
1962	N/A ³		3.227	N/A
1963	3.350	1	3.163	-0.187
1964	3.300	7	3.237	-0.063
1965	3.430	6	3.294	-0.143
1966	3.700	9	3.869	0.169
1967	3.995	11	3.962	-0.033
1968	4.621	12	4.478	-0.143
1969	5.758	12	5.718	-0.040
1970	6.172	9	6.364	0.192
1971	5.550	12	5.458	-0.092
1972	5.404	12	5.263	-0.141

¹Based on various 1991 maturities with coupons ranging from 3.4 percent to 5.8 percent. Average reoffer yield based on average of lowest yields for sales data in any month.

²Bank of America index of reoffer yields on A-rated bonds.

³No reoffer because there were no BART bonds outstanding.

Source: Bartle Wells Associates

usually in much more detail than arrayed in the interview form. They are conscious of Moody's downgrading of BART bonds in 1974 and the losses experienced by those who underwrote and purchased the bonds. BART is not a stranger to them, and they are not indifferent to its presence.

However, of the possible ways in which they perceive the impact of BART or its debt, only three are significant.

1. The Impact on Debt Ratios

First, BART's impact on debt ratios was considered. But it was almost without precedent. Rarely does a single project add so swiftly or so markedly to municipal debt in a major

urban area. The bond industry customarily sees debt ratios rise no more than a few percent at a time. What does it do when one project promises to increase the tax supported debt of the City and County of San Francisco by 75 percent over a few years? The industry looks to the underlying economy.

Individual analysts and traders will look either to their own research departments or to the rating agencies for guidance. Some evidently feel that debt ratios mean little, except as they affect the bond rating. Some will be guided more by their own in-house rating, based on in-house research. Under both approaches, BART's contribution to debt ratios was not considered as a detrimental characteristic. BART was seen as a positive or indifferent economic force. It did not undermine what was considered a very strong base of tax support; it did not pose a threat that other bonds would go unpaid.

The debt ratio created by BART did not appear to cause either major rating agency -- Moody's or Standard and Poor -- to lower any Bay Area credit. Even when Moody's Investors Service, Inc. lowered BART's own bond rating in 1974, it did so several years after the last sale of BART general obligation bonds, and did not express concern about the debt ratio involved.

Such effect, if any, that may have resulted from heightened debt ratios came from a shrinking of the market among conservative institutional investors. There may have been a period, uncertain but brief, in which portfolio managers were preempted by their own internal guidelines from buying municipal bonds when the debt ratio rose above 15 or 20 percent. The interview process has neither proved nor disproved this possibility, but it has shown that any effect on BART county issuers has been slight.

2. The Impact of Adverse Publicity

Second, the bond industry is sensitive to adverse publicity about a project. However, so long as the debt is wholly secured by the property tax power and the economic base remains strong, one project's bad press will not depress another issuer's bond prices. BART's bad press affected the resale market for BART bonds, but not for bonds issued by other agencies in BART counties.

3. The Impact of Rating Changes

Third, the bond industry responds to rating changes. Fortunately, BART sold the last of its own general obligation

bonds years before Moody's downrated them. BART bonds themselves were affected only in secondary sales. Many an early purchaser is now sitting on his bonds, aware that he can sell them only at a loss, and perhaps awaiting an opportune time to take the loss.

4. The Impact on Net Interest Cost for BART Bonds

Most of the loss in value of BART bonds is simply a result of higher money rates. BART bonds originally sold at the net interest costs summarized in Table III-8.

Table III-8

NET INTEREST COST OF BART BOND ISSUES

<u>Sale Date</u>	<u>Original Net Interest Cost</u>	<u>Issue Amount</u>
12/10/63	3.37%	\$ 50,000,000
9/15/64	3.46	60,000,000
7/14/65	3.38	70,000,000
11/17/65	3.59	70,000,000
10/27/66	3.77	50,000,000
2/16/67	3.74	70,000,000
6/28/67	4.14	70,000,000
10/25/67	4.42	70,000,000
4/10/68	4.48	70,000,000
10/10/68	4.70	70,000,000
4/17/69	5.27	70,000,000
8/6/69	5.84	<u>72,000,000</u>
		\$792,000,000

Source: Bartle Wells Associates

Today, the same quality of bond should sell at higher interest rates. However, there is no question but that a downrating further reduces the resale price of an outstanding issue. For example, a downgrading from AA to A is likely to "cost" about 20 basis points on a bond with 20 years to run. This will decrease its market value by about \$25 per \$1,000 of par value. Buyers of rapid transit bonds in the future will not be indifferent to the risk of subsequent downrating.

The interview/survey process disclosed strong confidence in the security of BART bonds themselves, and repeated comment that the bonds have been seriously underrated by Moody's

since the downgrading in 1974. The process also disclosed that many losses were incurred in the sale of BART bonds, and are still being incurred. BART's bad press has affected the market among individual investors, and the Moody's action has continued to weaken buyer interest.

The conclusion of the research is that the experience of underwriters and investors with BART bonds did not affect borrowing costs by other BART county issuers.

In the memory of those still active in the bond industry, BART was probably the first project to cause a precipitous rise in debt ratios in a large metropolitan area. It caused little anxiety in the 1962-1972 period.

The Bay Area economy is still viewed as strong. Many suburban credits have risen from Baa to A, A-1, or even Aa. The City and County of San Francisco, with an extremely high BART contribution to its debt, has been upgraded from Aa to Aaa.

Finally, BART itself continues to be viewed within the bond industry as a positive, or at worst, indifferent economic force. All of these facts indicate that if further BART bonds were again offered in the Bay Area, they would again have little or no impact on the borrowing costs of other BART county agencies. BART bonds, themselves, would probably not sell as favorably as they did in relation to the market from 1963 to 1968, because of a thin market for BART bonds among individual investors.

D. The Implications of the Research Findings

To what extent would the fiscal impact observed in the Bay Area reappear elsewhere? In fact, the fiscal impact of BART in the Bay Area has proved to be so slight that it can hardly be identified, much less transferred. In trying to apply what has been observed to other places or times, the important things to consider are the causes of increased borrowing costs, not the magnitude.

The BART experience shows that general obligation financing, per se, even though very large, relative to previous borrowings, does not raise interest cost significantly. Where increased cost results, it arises from concern over the underlying economy, and is rapidly mitigated by signs of economic strength.

On the other hand, the BART experience also shows that the building of a rail rapid transit system, although seen as a

positive step, does not lead to any automatic credit improvement. Credit will be improved by higher employment, new industries, greater per capita income, prompt tax collection, effective governmental management, and high standards of financing, planning and reporting. Rail transit, despite the findings of this project, is still perceived by the financial community as creating regional economic benefits.

The bond industry responds to demonstrated economic improvement in two ways. Rating agencies may uprate the area's bonds, particularly if they have been rated Baa or A in the past. In addition, real economic improvement does broaden the number of banks, insurance companies and individuals willing to buy bonds. But both of these effects, the improved rating and the improved reception among bond buyers, tend to lag the sale of bonds for any public investment which might contribute to the region's infrastructure. These effects are a response to demonstrated economic improvement, not to anticipated transit construction.

Prospective construction of a new rapid transit system elsewhere would probably not impact upon the credit rating of the area involved in any way. If the area already suffers from high unemployment or declining tax collections, however, investors will wait to see whether the effect of rapid transit is positive; they will not presume improvement.

IV. THE IMPACT OF BART BONDS ON THE FINANCING OF OTHER PUBLIC PROJECTS

The research hypotheses on the impacts of BART's financing include the concern that a local financing plan of the magnitude of BART's could affect the financing of other public projects. This impact could be manifested in any of three ways: bond proposals submitted to the voters might fail due to voter resistance to any further tax burden beyond BART's, nonvoted financing mechanisms might be used for other projects to avoid a potential defeat at the polls, or projects which otherwise might have been proposed might be deferred altogether.

Statistical analysis and key-informant interviews were used to pursue each of these potential BART impacts.

A. The Impact of BART Financing on Other Bond Issue Approvals

One frequently expressed concern over the magnitude of BART's debt was that it may have caused the failure of other future bond issues placed on the ballot for voter approval in the three BART counties. This became a vocal issue after the failure of the Southern Crossing, a proposed major new trans-Bay bridge, at the polls in June 1972. Although the Southern Crossing's defeat was not a BART impact, among the reasons cited for that defeat has been BART's financing burden.¹

This section reviews the research findings on the impacts of BART on nontransportation-related bond issues proposed in five Bay Area counties between 1962 and 1972. The research approach called for statistical analysis of voter response, and its relationship to tax burden, as well as an interviewing program which addresses the question of whether BART's debt, and the public reaction to it, contributed to the failure of other bond issues.

1. Statistical Analysis

Three indices of voter behavior were formulated for the statistical analysis.² These indices were applied to eleven bond elections in each of five counties, three counties in the BART District and two non-BART counties.

¹For a discussion of the Southern Crossing and its defeat, see McDonald & Smart, Inc., "A Generalized No-BART Alternative Transportation System," prepared for the Metropolitan Transportation Commission, May 1975.

²See Section II and Appendices A and B for further discussion of the indices.

Regression analysis involving three variations of the voter index (see Section II) indicates there is no convincing relationship between voter behavior and the total tax burden when all counties were evaluated together. These results tend to refute the notion that voters' willingness to pass general obligation issues is related to their local tax burdens, although the lack of relationship could also stem from a faulty index, collapse of the data to only 11 points per county, or the narrow concept of tax burden which excludes state and federal tax burdens from consideration.

When the data were partitioned to focus on behavior in BART counties together and non-BART counties together, the result is the same: local tax burden does not statistically explain changes in the voter behavior index. This finding could lead to the conclusion that the voters of the BART counties, with their heavier tax burden, did not react to other public borrowing any differently than the residents of counties who did not share BART's tax burden.

When the data are partitioned further to focus on each county separately, there is a surprising result. Local tax burden fails to be associated with voter behavior in Alameda, Contra Costa, San Mateo and San Francisco. However, local tax burden in Marin County (a non-BART county) has a statistically significant relationship to voter sentiment with 78 percent of the variability in one voter behavior index being explained by changes in local tax burden. Marin County, it may be noted, has been the focus of citizen interest in limiting future growth.

Of note, all but one proposal in Marin County were for school bonds. In fact, school bonds are the most prevalent type of bond proposal in the data set. School bonds issues most often arise from growth centers, the obvious place to encourage voter resistance to growth accommodation. Although Marin County is by no means the only area where growth is being viewed with concern, the trend clearly appeared in Marin County during the 1962-1972 period, when it did not appear so pronounced elsewhere.

An alternative approach was proposed to test the hypothesis that voter response was inversely related to tax burden. Local tax burden was divided into property tax and sales tax burden per household and inspected for a statistical relationship between these variables and the measures of voter sentiment. There was no statistical support for this hypothesis.

The conclusion from the statistical analysis is that voter sentiment is generally unrelated to local tax burden, per se.

To the extent that local tax burden may be associated by voters with unwanted growth, or distrust of government as a resource allocator, one may support a cause-effect relationship. But the 1962-1972 data do not reflect widespread concern on these points.

There remains the question of whether or not higher taxation deterred decisionmakers from putting important projects to a vote. Nonvoted debt was used as a proxy for reluctance to put projects to a vote, and an attempt was made to find a relationship between nonvoted debt, tax burden at the time of the vote, and voter sentiment.

For this approach to be meaningful, substitutability must exist. That is, decisionmakers must have discretion over whether to fund a project by bringing a proposal to the voters or to fund the project with nonvoted debt. That option was not then generally available for school, water, sewer and park bonds. As a result, the data base may have been too small for meaningful statistical analysis, although the research approach included statistical analysis to assure a comprehensive evaluation of possible BART impacts. In fact, the statistical analysis proved that this hypothesis could be confirmed or rejected only, if at all, on the basis of interviews.

Appendix B contains the statistical analysis.

2. The Interviewing Program

The people interviewed were involved and informed people in Bay Area counties. One of the interviewees had served in three Bay Area communities during the decade following BART's approval and a second of them in two. In addition, the study has drawn upon the collected experiences of Bartle Wells Associates since its formation in 1964, and upon the long-term observations of a professional election consultant active throughout California.¹

The unqualified and consistent conclusion by each person confirmed the weak conclusions of the statistical analysis: voter response and policy decisions on public projects were not perceptibly affected by BART, BART debt, or BART publicity. Local projects stand or fall for local reasons.

BART debt itself, and BART-related tolls and taxes, are clearly visible. Anyone seeking an excuse, if one were needed, for the failure of a bond election, could readily point to BART. The interviews yielded no evidence of this

¹ See Appendix G for the comments of Mr. Evan Peters, public relations consultant expert in local bond campaigns.

excuse. In every case, local decisions were governed by local policy, and were not influenced by BART and its debt.¹

The principal reasons for failure of major regional or subregional bond issues are summarized in Table IV-1.

Table IV-1
FAILURE OF VOTED BOND ISSUES

<u>Date</u>	<u>Bond Issue</u>	<u>Reason for Failure</u>
1964	Napa sewers	Ballot wording was confusing
pre-1965	Concord park & recreation Livermore park & recreation	Inadequate campaign organization
1966	Contra Costa junior college	Racial disturbance
1962	Santa Clara flood control	Unnecessary general election resulted in small voter response
1962	Contra Costa park & recreation	County lacks support in cities
1967	Contra Costa county buildings	
1968	Contra Costa juvenile hall	
1971	San Francisco hall of justice	General resistance to public buildings
1970	San Francisco school rehabilitation	Voter dissatisfaction with schools
1971	San Francisco school safety	Voter resentment over Field Act ¹

¹The Field Act requires that all school buildings be reinforced to withstand earthquakes.

Source: Bartle Wells Associates

¹For further substantiation of these findings, see Booz, Allen & Hamilton, Inc., "The Cost and Financing of Local Government Services and Improvements", a working paper prepared for Metropolitan Transportation Commission, September 1977.

In each instance, voter response was insufficient to provide a two-thirds majority. Obviously, voters have a plethora of reasons for voting "no." At least a few voters undoubtedly reflect on BART debt or perhaps more to the point -- their lack of confidence in government which was reinforced by BART's bad press. However, the effect of BART is so obscure that it could not be measured statistically and was not volunteered as a cause of failure by any person interviewed who was involved in election planning or processes.

B. The Use of Nonvoted Debt

One potential BART impact could have been the use of nonvoted debt in the Bay Area by public agencies concerned with the possibility of rejection of increased general obligation debt because of BART's debt. This section describes the types of nonvoted debt available to public agencies, the use of this financing instrument between 1962 and 1972, and discusses the impact BART may have had on this choice, based on the interviewing program.

1. Forms of Nonvoted Debt

There are four principal forms of nonvoted debt which were available to local governments borrowing during the period between 1962 and 1972.

- Joint Powers Bonds - Bonds issued on behalf of two or more public agencies acting in concert to exercise a power common to both are called joint powers bonds. These bonds were permitted only for public buildings and closely related facilities. Sports facilities, libraries and other joint city-county buildings are the most common candidates for joint powers financing. These bonds are lease-rental revenue bonds, that is, secured solely by rentals payable by the public agencies which occupy the facilities under lease from the joint powers authority. The authority is a legal entity created, usually, for the sole purpose of issuing the bonds on behalf of the user agencies.
- Nonprofit Corporation Bonds - Nonprofit corporation bonds are issued on behalf of one, possibly two or more, public agencies by a corporation formed to finance and occasionally to operate and maintain a public facility. The corporation may be formed and bonds issued for any lawful purpose. The most common use of the nonprofit corporation is to finance public buildings for the exclusive use of one public agency. Sports facilities lacking joint sponsorship, city halls and county jails are among the most common users of nonprofit corporation financing; however, the method has been adapted to finance sewerage facilities, acquire buses,

expand airport terminals and meet other public needs. These bonds are also lease-rental revenue bonds, and rentals may be payable either by the public agency as tenant or by private entrepreneurs who qualify under certain tax regulations.

- Redevelopment Bonds - Redevelopment bonds are bonds issued by local redevelopment agencies to arrest blight and stimulate planned and orderly development of core areas or inner-city housing. Bonds were permitted for many kinds of infrastructure improvements physically part of the redevelopment area, and were issued by redevelopment agencies specially empowered to so act under state law. Redevelopment bonds have been used most commonly for core area improvements. These bonds are secured by rental and other revenues from the improvements and by allocating future tax revenues attributable to growth of taxable valuation.
- Charter Revenue Bonds - Seventeen of the older cities in the immediate Bay Area (Alameda, Albany, Berkeley, Hayward, Mountain View, Oakland, Palo Alto, Piedmont, Redwood City, Richmond, San Francisco, San Jose, San Leandro, San Mateo, San Rafael, Santa Clara and Sunnyvale) derive their powers from charter rather than general law. Many, perhaps most, are empowered to issue revenue bonds for stated purposes without a vote; others can do so by charter amendment, subject to acquiescence by the state legislature. In fact, charter revenue bonds are issued rather infrequently. Either the purposes are rather limited, prospective revenues are inadequate, interest cost is higher than acceptable, or the city council opts in favor of a vote.

There are a number of other special purpose or limited benefit bonds, such as parking facility or local assessment bonds, which may also be issued under strictly prescribed procedures without a vote, but their use is not likely to reflect any communitywide point of view.

The research approach was directed almost solely at the two forms of lease-rental revenue bonds. These are the most common forms of nonvoted debt, and they are most commonly employed to finance projects of communitywide interest or benefit. They are also issued most commonly by cities and counties, two of the three legal entities which are constitutionally restricted from incurring long-term debt without a two-thirds approving vote.¹

¹School districts, incidentally, are also now permitted to issue lease-rental revenue bonds upon a majority vote, but were unable to do so in the period under study.

2. Nonvoted Debt Issued in Five Bay Area Counties,
1962-1972

Table IV-2 lists 33 nonvoted bond issues sold by local agencies in the five-county Bay Area during the study period. These appear to include all lease-rental revenue bonds plus a number of other revenue bonds. Of the issues listed, 16 were issued by agencies within the BART District.

3. BART's Impact on the Selection of Nonvoted Debt

The only way to confirm the influence of BART's financing and tax burden on the selection of nonvoted debt is to explore the recollection of financial advisors and public officials who were involved in the decisionmaking process. The research and interviewing plan revealed no relationship between the two events.

The principal reason for choosing nonvoted financing is closely related to voter response -- past or anticipated. Table IV-3 illustrates the reasons cited for a number of major issues.

In no case was BART or fear of BART-related public reaction cited. Further, as shown in Table IV-3, nonvoted bonds have been used for similar kinds of projects in both BART and non-BART counties. It may be observed that there has been a marked increase in the use of nonprofit corporation bonds since 1966, but the reason is wholly unrelated to BART.

Nonprofit corporation bonds were first marketed at public competitive bid in California in 1966. As the bonds gained stature in the marketplace, they became more price competitive with general obligation financing. When State law was further amended in 1970 to mandate competitive bidding, nonprofit corporation bonds also gained sudden respectability among many policymakers. The trend to increased use of nonprofit corporation bonds is statewide, not a Bay Area development.

In each case, the option of voted bonds was weighed and rejected. In no instance have the authors observed that BART debt or any other specific prior debt entered consciously into the decision process. In every instance, there has been some compelling reason which clearly dictated the financing choice.

Table IV-2

NONVOTED BONDS ISSUES IN BART COUNTIES AND NON-BART COUNTIES
(1962-1972 ONLY)

	Amount	Issue Date
<u>Alameda</u>		
City of Berkeley-Sather Gate Garage Company	\$ 2,300,000	11/69
City of Hayward-Civic Center Project	9,000,000	5/67
City of San Leandro Parking Authority	590,000	12/72
Oakland-Alameda County Coliseum	25,500,000	4/64
Port of Oakland Golf Course-City of Oakland	800,000	6/65
City of Fremont Civic Center Corporation	1,000,000	3/67
<u>Contra Costa</u>		
Contra Costa Education Center Authority	2,800,000	9/71
Contra Costa County Juvenile Facilities Corp.	2,380,000	4/71
City of Martinez, Firehouse, Inc.	175,000	4/65
Pleasant Hill Civic Center Authority	1,200,000	11/71
Walnut Creek Recreational Facilities	2,750,000	7/67
Walnut Creek Aquatic Facilities	650,000	6/71
<u>San Francisco</u>		
San Francisco Muni Railway Improvement Corp.	9,000,000	2/69
San Francisco Muni Railway Improvement Corp.	8,000,000	8/69
San Francisco Stadium Inc.	16,100,000	11/70
San Francisco Stadium Inc.	8,500,000	11/69
<u>San Mateo</u>		
San Mateo County Election Eq. Corporation	2,265,000	4/67
San Mateo County Hall of Justice	9,600,000	7/68
Esterio-San Mateo County Public Building Auth.	995,000	12/71
San Carlos Civic Center Authority	1,900,000	9/67
City of Daly City Civic Center Corporation	3,000,000	8/65
City of Menlo Park Civic Center Corporation	2,800,000	10/68
<u>Santa Clara</u>		
City of San Jose Berryessa Project	3,000,000	4/67
Santa Clara County Building Authority	2,400,000	7/67
Santa Clara County Building Authority	17,000,000	5/71
Santa Clara County Public Facilities Corporation	3,700,000	3/72
Santa Clara County Public Facilities Corporation	3,500,000	10/72
Santa Clara Reclamation Corporation	1,200,000	10/70
Mountain View Shoreline Regional Park	1,950,000	5/70
San Jose Civic Improvement Authority	8,000,000	6/69
Parking Authority-City of San Jose	3,225,000	2/72
City of Santa Clara Land Fill Corporation	850,000	6/67
<u>Marin</u>		
Marin County Corte Madera Public Library Auth.	855,000	10/70

Table IV-3

REASONS FOR SELECTING NONVOTED FINANCING

Year	Object of Financing	Reason for Selection
1967	Walnut Creek golf course	Project of benefit to limited segment of the city
1971	Walnut Creek aquatic facilities	Voters had approved the project concept in earlier bond election
1969	San Francisco MUNI improvements	Voters had given strong, but less than two-thirds approval earlier
1969	Sather Gate garage	Project appeared self-supporting from expected revenues
1971	Santa Clara service center	County lacked necessary support among city voters
1972,	Santa Clara administration	
1973	building and others	

Source: Bartle Wells Associates

C. Deferral of Capital Improvements Projects

A third type of potential impact from the burden of BART's financing deals with whether BART debt or BART itself influenced decisions to drop or defer public projects which would otherwise have been put to a vote. The interviewing program revealed a number of projects which have, indeed, been deferred. They are summarized, with the reasons for this deferral, in Table IV-4. None of them has been promoted recently.

Nothing in the interview process suggested that BART or BART debt was in any conscious way a factor in dropping or delaying any project. Nor is BART considered in any respect a factor in the continued deferral of these projects.

This conclusion is offered, however, with one qualification. The study has not explored the reasons for voter or policy-maker response to transportation projects that would require or permit linkage to the BART system or consolidation with the BART District.

Table IV-4
RECENTLY DEFERRED CAPITAL IMPROVEMENTS

Project	Reason for Deferral
Berkeley city hall	Council not unanimous
San Francisco court building	Reluctant to use corporation in view of previous support by bare majority
San Francisco garages at Ghiradelli and Washington Squares	High project cost, especially under design/construction contracts used for past corporation projects
San Francisco law library	Lacks broad community support
San Francisco purchase of East Bay terminal	Inadequate revenue forecasts
Pleasant Hill city hall and police station	Land acquisition and recreation needs given higher priority
Santa Clara transportation administrative center	Project not yet qualified for necessary federal assistance

Source: Bartle Wells Associates

The findings of this analysis are reinforced by further research into the local policy implications of BART.¹

¹Booz, Allen and Hamilton, Inc., op. cit.

V. THE IMPACT OF BART'S BOND ISSUE ON REGIONAL PUBLIC FINANCING: CONCLUSIONS AND IMPLICATIONS

The magnitude of the general obligation bond issue which financed the costs of constructing BART's basic system was virtually unprecedented. At the time, it represented the largest single local bond issue in history. The \$792 million debt represented a full 15 percent of the assessed valuation of the property in the three BART counties, the legal limit for the debt of a special district. In fact, with one vote, the voters of the counties were more than doubling their indebtedness.

A bond issue of this magnitude changes the financial condition of a region. It would not seem unlikely that the bond issue could affect the creditworthiness of the region or the interest rate on other public debt. It might also cause local government, for fear of having new bonded indebtedness proposals rejected by the voters in the shadow of the region's significant debt levels, to seek financing mechanisms which did not require public approval or defer new capital improvements altogether. This report has addressed each of these possibilities.

A. The Impact of BART's Bond Issue on the Cost of Public Borrowing

BART debt could have been perceived as increasing the risk of tax delinquencies. Increased risk is accommodated in the marketplace by an increased cost of borrowing. Therefore, BART's debt could have an impact on the cost of other public borrowing.

On the other hand, BART debt could have been perceived as an investment in the regional infrastructure which would encourage future growth, reinforcing the ability of the region to support further general obligation debt. This second effect would be contrary to the first.

Both of these elements (and many other market forces which would affect all bond issues equally) influence the cost of borrowing. In order to isolate the effect of BART's bond issue alone on the public financing market, it was necessary to identify bond sellers' and bond buyers' perceptions to each of the BART-induced effects.

The research approach to isolating these differing influences was to interview key individuals in the municipal financing industry to determine their interpretation of the bond buyers' perceptions. In the municipal bond financing industry,

the judgment of a few individuals will determine the creditworthiness of a bond issue and influence its price. The research approach was designed to investigate why costs of public borrowing followed their historical pattern and whether BART or its debt was an influence.

None of those interviewed conveyed the opinion that buyers were either enthused or concerned about BART or high-debt ratios, when considering alternative investments. The magnitude of BART's debt was apparent in the debt ratio which is published as part of an initial bond offer. Thus, it was available to the major rating agencies when rating other bond issues. Nonetheless, these agencies not only failed to downgrade BART county issues because of the magnitude of BART's issue, they rapidly upgraded suburban ratings during BART's construction. None of the key informants indicated BART had a significant impact on the interest costs of other public issues.

B. The Impact of BART's Bond Issue on the Financing of Other Public Projects

Although 61.2 percent of the votes cast in November 1962 were in favor of BART's financing, the size of the debt could have satiated the public's willingness for additional bonded indebtedness. And most proposals to incur general obligation debt supported by the property tax require two-thirds approval from the votes cast. As a result, general obligation bonds are not lightly proposed in California.¹

Statistics on voter response to bond elections were analyzed to identify any apparent shifts in sentiment as BART debt and taxes increased in size and visibility. Then, independently, a program of interviews checked on the statistical conclusions and examined whether awareness of BART caused any increase in the use of nonvoted bonds.

This study involved inquiries directly into the folklore of public financing. It examined whether or not a large bond commitment, such as BART, would turn voters against other debt proposals for other purposes. It explored whether the existence of conspicuous debt, such as BART's, causes policy-makers to pursue less conspicuous means for financing other projects or to drop them altogether.

The conclusion from the statistical analysis is that voter sentiment is generally unrelated to local tax burden, per se.

¹By virtue of its enabling legislation, BART was authorized to incur debt with the approval of 60 percent of the vote of the three-county district.

There remains the question of whether or not higher taxation deters decisionmakers from putting important projects to a vote. Nonvoted debt was used as a proxy for reluctance to put projects to a vote, and an attempt was made to find a relationship between nonvoted debt, present tax burden, and voter sentiment.

Sixteen nonvoted bond issues were sold by local agencies within the BART District between 1962 and 1972. The interview process used this tabulation of nonvoted bond issues as a basis for gaining a reaction to the hypothesis that this type of debt was used because of the impact of BART's bond debt on public willingness to approve other public projects.

While nonvoted bonds have been used for numerous capital improvement projects, particularly since 1966, the reason is wholly unrelated to BART. In 1966, nonprofit corporation bonds were first marketed in public competitive bids. As the bonds gained stature in the marketplace, they became more price competitive with general obligation bond financing. When state laws were further amended in 1970 to mandate competitive bidding, nonprofit corporation bonds also gained sudden respectability among many policymakers. The trend to increased use of nonprofit corporation bonds is statewide, not a Bay Area development.

In each case in which nonvoted debt was recommended and passed, the option of voted bonds was weighed and rejected. But in every instance, the interviewing program revealed there had been some compelling reason, other than BART, which clearly dictated the financing choice.

The ultimate reluctance to put a public project's financing before the voters is to defer the project altogether. This research revealed no instance in which BART or its associated debt was cited as a cause for deferring another public project.

APPENDIX A

DATA DESCRIPTION AND FORMATS BART IMPACT ON THE COST OF BORROWING

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I. ISSUE FILE

A. DESCRIPTION - The Issue File describes the various bond issues and issuers in chronological order by county for the 11 years, 1962-1972. Each case is a single bond issue.

B. THE VARIABLES

1. "CASE" - The case number; used as an identification variable for a particular case. The numerical series is repeated for each county in order to facilitate a subfile structure. (F 3.0-columns 1-3.)

2. "COUNTY" - The county of multi-county district in which the bond was issued. (F1.0-column 5). County values are as follows:

1 = Alameda
2 = Contra Costa
3 = Marin
4 = San Francisco
5 = San Mateo
6 = San Francisco BART District
7 = Multi-county Issuers

3. "MONTH" - The month in which the bond was issued. (F2.0-columns 7-8).

4. "YEAR" - The year in which the bond was issued (F2.0-columns 10-11).

5. "ISSUER" - The district, municipality, or county issuing the bond. (F2.0-columns 14-15). Issuers followed by an asterisk are indicated as having unrepresentative debt structures. Issuers are identified by county:

Alameda

1 = Alameda County Flood Control and Water Conservation Districts
2 = Alameda Unified School District
3 = City of Albany
4 = Albany Unified School District
5 = Alviso School District
6 = available
7 = Antioch Unified School District
8 = Berkeley Unified School District
9 = Alameda County Water District
10= Castro Valley School District
11= Centerville School District
12= Castro Valley School District
13= Decoto School District
14= available
15= Emery Unified School District
16= City of Fremont
17= Fremont-Newark Jr. College District

18= Fremont Unified School District
19= City of Hayward
20= Hayward Unified School District
21= Hayward Union High School District
22= Independent School District
23= Inman School District
24= Irvington School District
25= La Vista School District
26= City of Livermore
27= available
28= Livermore School District
29= available
30= Niles School District
31= Mt. Eden School District
32= Murray School District
33= City of Newark
34= Newark School District
35= Newark Unified School District
36= New Haven Unified School District
37= City of Oakland
38= available
39= Oro Loma Sanitary District
40= Paradise Unified School District
41= Peralta Junior College District
42= City of Pleasanton
43= available
44= Port of Oakland
45= San Francisco BARTD, Special Service District #1 (Berkeley)
46= San Lorenzo School District
47= available
48= available
49= City of Union City
50= Union Sanitary District
51= Warm Springs School District
52= Washington Union High School District
53= City of Berkeley

Contra Costa

1 = Acalanes Union High School District
2 = Alamo School District
3 = Alhambra Union High School District
4 = City of Antioch
5 = Antioch Unified School District
6 = City of Brentwood
7 = Brentwood Union School District
8 = available
9 = Central Contra Costa Sanitary District #42
10= City of Concord
11= Concord Hospital District
12= Contra Costa County
13= available
14= Contra Costa County Sanitation District

15= Contra Costa County Storm Drain District
16= Contra Costa County Water Improvement District #1*
17= available
18= Contra Costa Junior College District
19= available
20= available
21= Crockett-Valona County Water District
22= Danville Union School District
23= available
24= City of El Cerrito
25= Knightsen School District
26= Lafayette School District
27= Liberty Union High School District
28= City of Martinez
29= Martinez School District
30= Moraga School District
31= Mount Diablo Unified School District
32= Mt. View Sanitary District
33= available
34= Oakley Union School District
35= Orinda Fire Protection District of Contra Costa
36= Orinda Union School District
37= City of Pinole
38= Pinole-Hercules Union School District
39= City of Pittsburg
40= Pittsburg Unified School District
41= City of Pleasant Hill
42= Pleasant Hill Civic Center Authority
43= Pleasant Hill Recreation and Park District
44= Richmond Municipal Sewer District
45= Richmond Unified School District
46= Richmond Union High School District
47= City of San Pablo Assessment District
48= City of San Pablo Housing Authority
49= City of San Pablo Sanitary District
50= San Ramon School District
51= San Ramon Valley Union High School District
52= Sheldon School District
53= available
54= Stege Sanitary District
55= Vine Hill School District
56= City of Walnut Creek
57= Walnut Creek School District
58= Walnut County Water District

Marin

1 = Bolinas Beach Public Utility District
2 = Town of Corte Madera
3 = Dixie School District
4 = Fairfax School District
5 = available
6 = Kentfield School District
7 = Lagunitas School District

8 = Larkspur School District
9 = Las Gallinas Valley Sanitation District
10= Marin County
11= Marin County Sanitary District #2
12= Marin Municipal Water District
13= Marinwood Community Services District
14= Marin County Sanitary District #6
15= City of Mill Valley
16= Mill Valley School District
17= City of Novato
18= Novato Unified School District
19= Novato-San Jose Unified School District
20= Reed Union School District
21= San Anselmo School District
22= City of Sausalito
23= San Jose School District
24= City of San Rafael
25= San Rafael High School District
26= San Rafael School District
27= Strawberry Recreation District
28= City of Tiburon
29= available
30= West Marin Union School District

San Francisco

1 = City and County of San Francisco

San Mateo

1 = City of Belmont
2 = Belmont School District
3 = Brisbane School District
4 = City of Burlingame
5 = Coastside Union School District
6 = Cabrillo Unified School District
7 = Estero Municipal Improvement District*
8 = Bayshore School District
9 = Half Moon Bay Fire Protection District
10= Half Moon Bay Union High School District
11= Hillsborough School District
12= Hope School District
13= Jefferson School District
14= Jefferson Union High School District
15= Laguna Salada Union School District
16= Las Lomitas School District
17= available
18= City of Menlo Park
19= City of Millbrae
20= Millbrae School District
21= Montara Sanitary District
22= Montara School District
23= City of Pacifica
24= Peninsula Hospital District
25= Portola Valley School District

26= Ravenswood City School District
27= City of Redwood City
28= Redwood City General Improvement District*
29= Port of Redwood City
30= City of San Bruno
31= San Bruno Park School District
32= City of San Carlos
33= San Carlos Municipal Sewer District
34= San Carlos School District
35= City of San Mateo
36= San Mateo City School District
37= San Mateo Junior College District
38= Sequoia Hospital District
39= Sequoia Union High School District
40= available
41= Skyline County Water District*
42= City of South San Francisco
43= South San Francisco Unified School District
44= Westborough County Water District*
45= Woodside School District

SFBARTD

1 = San Francisco Bay Area Rapid Transit District

Multi-County Issuers

1 = Amador Valley Joint Union High School District
2 = East Bay Municipal Utility District
3 = Green Joint School District
4 = Livermore Joint Union High School District
5 = North Marin County Water District
6 = Pleasanton Joint School District
7 = San Joaquin Delta Junior College District
8 = South County Joint Junior College District
9 = Tomales Joint Union High School District
10= Valley Community Services District

6. "TYPE" - The type of district or jurisdiction that issued the bond. (F1.0-column 18). The values of the type variable are as follows:

1 = General government
2 = School district
3 = Water supply
4 = Flood control
5 = Sanitation
6 = Redevelopment
7 = Transportation
8 = Other
9 = SFBART

7. "ASVAL" - The assessed valuation of the district or jurisdiction that issued the bond (at time of issuance). The values are in full dollar terms. (F1.0-columns 31-39).

8. "BARTDEBT" - The amount of BARTD debt applicable to the district that issued the bond (at time of issuance). The values are in full dollar terms. (F9.0-columns 31-39).

9. "ALLDEBT" - The total direct and overlapping debt applicable to the district that issued the bond (at time of issuance). This variable represents the sum of BART and nonBART debt encumbered by and still outstanding in the particular district. The values are in full dollar terms. (F10.0-columns 41-50).

10. "NIC" - The "net interest cost" bid for the bond issue. This figure represents the weighted average interest rate on a weighted average amount of bonds outstanding, taking any premiums or discounts into account. This definition of interest rate is distinguished from "gross interest cost." See Alan Rabinowitz's Municipal Bond Finance and Administration (New York: John Wiley & Sons) pp. 17-20, for a more complete description. (F5.3-columns 53-57).

1 = Missing value.

11. "PARVAL" - The par value of the bond issue. This figure represents the face value of the bond sale, and does not include any premiums or discounts. Its value is expressed in thousands of dollars (\$000). (F6.0-columns 59-64).

12. "FILE" - The file identification number. (F1.0-column 78). The variable has the following values:

1 = Issue file
2 = Market file
3 = Voter file

C. SOURCES

1. Variables 1,12: Identification only.

2. Variables 2-9: California Municipal Statistics, Inc. Fact sheets on individual bond issues.

3. Variables 10-11: Compiled by the Bank of America N.T.&S.A., San Francisco, Municipal Bond Research Department records.

II. MARKET FILE

A. DESCRIPTION - The Market File contains data on interest rates, inflation rates and BART reoffer rates for the 11 year period, 1962-1972. Each case is a single month, and cases are filed in chronological order.

B. THE VARIABLES

1. "CASE" - The case number, which corresponds to the month chronologically for the 11 year period, 1962-1972. (F3.0-columns 1-3).

2. "MONTH" - The month during which the rates were applicable. (F2.0-columns 7-8).
3. "YEAR" - The year corresponding to the month in which the rates were existant. (F2.0-columns 10-11).
4. "TBILL" - The three month Treasury bill yield during the particular month. (F5.3-columns 15-19).
5. "BB" - The Bond Buyer 20-bond index during the particular month. This index is an estimated money market indicator which is not based on actual bond sales. The 20-bond index pertains to rates on bonds rated "BAA," and must be distinguished from the 11-bond index which pertains to "AAA" rated bonds. The statistic is the mean of weekly Bond Buyer indices for the given month. (F5.3-columns 23-27).
6. "CAL" - The California index during the particular month. This index is compiled by the Bank of America for its internal use. It is based on actual sales and trading data and is the yield to be expected on a 20-year California "A" rated bond. The statistic is the mean of weekly California indices for the given month. (F5.3-columns 31-35).
7. "SFCPI" - The quarterly Consumer Price Index for the San Francisco-Oakland Metropolitan Area (1967 = 100). (F5.1-columns 39-43).
8. "USCPI" - The monthly Comsumer Price Index for the nation as a whole (1967 = 100). (F5.1-columns 47-51).
9. "LO" - The minimum BART reoffer price (rate) for a BART issue during the particular month. The figure pertains solely to reoffer interest yields and does not control for the differential tax treatments of interest vs. capital income for the various rates. If there were no reoffers made during a specific month, the variable takes the "missing value" of 0. (F4.2-columns 55-58).
10. "HI" - The maximum BART reoffer price (rate) for a BART issue during the particular month. This figure pertains solely to reoffer interest yields and does not control for the differential tax treatments of interest vs. capital income for the various rates. If there were no reoffers made during a specific month, the variable takes the "missing value" of 0. (F4.2-columns 62-65).
11. "FILE" - The file identification number. (F1.0-column 78). The variable has the following values:
1 = Issue file
2 = Market file
3 = Voter file

C. SOURCES

1. Variables 1,2,3,11: Identification only.
2. Variables 4,5,6,9,10: Bank of America N.T.&S.A., San Francisco. Municipal Bond Research Department files.
3. Variables 7-8: U.S. Department of Labor, Bureau of Labor Statistics. "Consumer Price Index for Urban Wage Earners and Clerical Workers: All items--Series A."

III. VOTER FILE

A. DESCRIPTION - The Voter File contains data on tax rates, income, population, voter indices and nonvoted debt. The data is organized chronologically by county, where each case is a single year.

B. THE VARIABLES

1. "CASE" - The case number, which corresponds to the year by county for the 11 year period, 1962-1972. (F3.0-columns 1-3).
2. "COUNTY" - The county for which tax and voter data is applicable. (F1.0-column 5). County values are as follows:
1 = Alameda
2 = Contra Costa
3 = Marin
4 = San Francisco
5 = San Mateo
3. "YEAR" - The year in which tax and voter data is applicable. (F4.0-columns 7-10).
4. "ASVALUE" - The assessed valuation of the county during the particular year. The values are expressed in thousands of dollars (\$000). (F7.0-columns 12-18).
5. "BPTR" - The BART property tax rate levied by the county during the particular year. The variable is expressed as a rate on \$1 of assessed valuation. (F6.5-columns 20-25).
6. "CAPTR" - The county's average total property tax rate during the particular year.

$$\text{CAPTR} = \frac{\text{Total Property Tax Revenues}}{\text{Assessed valuation}}$$

The variable is expressed as a rate on \$1 of assessed valuation. (F5.4-columns 27-31).

7. "TAXSALE" - The amount of taxable sales generated by the county during the particular year. The value is expressed in thousands of dollars (\$000). (F7.0-columns 33-39).

8. "BSTR" - That portion of the county sales tax rate attributable to BART during the particular year. The variable is expressed as a rate on \$1 of taxable sales. (F4.3-columns 41-44).

9. "NBSTR" - The nonBART-related sales tax levied within the county during the particular year. The variable is expressed as a rate on \$1 of taxable sales. (F3.2-columns 46-48).

10. "INCOME" - The total annual personal income of the county. Personal income includes wages, salaries, other labor income, proprietors' income, property income and transfer payments of all county residents. The value is expressed in thousands of dollars (\$000). (F7.0-columns 50-56).

11. "POP" - The county population during the particular year. The value is expressed as the full number of citizens residing within county boundaries. (F7.0-columns 58-64).

12. "VINDEX" - The "voter index" of the county for the particular year. The variable is expressed as

$$\frac{\sum \text{ (affirmative votes} \times \$ \text{ parvalue of proposal})}{\sum \text{ (total votes cast} \times \$ \text{ parvalue of proposal})}$$

for bond elections held within the county. Vindex is intended to represent a weighted measure of voter willingness to approve general obligation dollar bond volume. Thus, large par value issues, or heavy voter turnouts dominate the index. $0 < \text{VINDEX} < 1$. For years in which no bond elections were held or for which results were unobtainable, the variable takes the "missing value" of 1. (F4.3-columns 66-69).

13. "NVD" - The new nonvoted bond debt undertaken by the county during the particular year. The values are expressed in thousands of dollars. (\$000). (F5.0-columns 71-75).

14. "FILE" - The file identification number. (F1.0-column 78). The variable has the following values:

- 1 = Issue file
- 2 = Market file
- 3 = Voter file

C. SOURCES

1. Variables 1,2,3,14: Identification only.
2. Variable 4: State of California. Annual Report of Financial Transactions Concerning Counties of California, fiscal years 1962-1963 through 1972-1973.
3. Variable 5: Office of the Director of Finance, San Francisco Bay Area Rapid Transit District, Oakland, California.

4. Variables 6-7: State of California. Annual Report of the California State Board of Equalization, fiscal years 1962-1963 through 1972-1973.

5. Variables 8,9,13: Bank of America N.T.&S.A., San Francisco. Municipal Bond Research Department records.

6. Variables 10-11: State of California. California Statistical Abstracts, 1962-1972.

7. Variable 12: The county records of the Registrars of Voters and/or County Clerks of Alameda, Contra Costa, Marin, San Francisco, and San Mateo Counties.

IV. NIC FILE

A. DESCRIPTION - The NIC File is a partial merger of the Issue and Market Files, intended for comparative analysis of the NIC rates of the local municipal issuers to the more general market conditions and interest rates.

B. THE VARIABLES

1. "CASE" - The case number; used as an identification variable for a particular case. The numerical series is repeated for each county in order to facilitate a subfile structure. (F3.0-columns 1-3).

2. "COUNTY" - The county or multi-county district in which the bond was issued. (F1.0-column 5). County values are as follows:

- 1 = Alameda
- 2 = Contra Costa
- 3 = Marin
- 4 = San Francisco
- 5 = San Mateo
- 6 = San Francisco BART District
- 7 = Multi-county Issuers

3. "MONTH" - The month during which the particular local bond was issued and during which the market interest rates were applicable. (F2.0-columns 7-8).

4. "YEAR" - The year during which the particular local bond was issued and during which the market interest rates were applicable. (F2.0-columns 10-11).

5. "TBILL" - The three month Treasury bill yield during the month in which the particular local bond was issued. (F5.3-columns 15-19).

6. "BB" - The Bond Buyer 20-bond index during the month in which the particular local bond was issued. See Section II B (5) for a more detailed description. (F5.3-columns 23-27).

7. "CAL" - The California Index during the month in which the particular local bond was issued. See Section II B (6) for a more detailed description. (F5.3-columns 31-35).

8. "NIC" - The "net interest cost" bid for the particular local bond issue. See Section I B (10) for a more detailed description. (F5.3-columns 53-57).

1 = Missing value.

9. "PARVAL" - The par value of the particular local bond issue. Its value is expressed in thousands of dollars (\$000). See Section I B (11) for a more detailed description. (F6.0-columns 59-64).

C. SOURCES

1. Variables 1,2,3,4: Identification only.

2. Variables 5,6,7,8,9: Bank of America N.T.&S.A., San Francisco. Municipal Bond Research Department records.

V.

VINDEX FILE

A. DESCRIPTION - The Vindex File contains data used for calculation of the variable "Vindex" in the Voter File. Each case is a single bond election, and the cases are ordered chronologically by county.

B. THE VARIABLES

1. "COUNTY" - The county in which the particular bond election was held. (F1.0-column 1). County values are as follows:

1 = Alameda

2 = Contra Costa

3 = Marin

4 = San Francisco

5 = San Mateo

2. "YEAR" - The year in which the particular bond election was held. (F2.0-columns 5-6).

3. "TYPE" - The type of bond measure sent to the electorate. (F1.0-column 10). The values of the type variable are as follows:

1 = General government

2 = School district

3 = Water supply

4 = Flood control

5 = Sanitation

6 = Redevelopment

7 = Transportation

8 = Other

4. "PARVAL" - The par value of the proposed bond issue. This variable represents the face amount of the bond measure sent to the electorate. Its value is expressed in full dollar terms. (F8.0-columns 14-21).
5. "YES" - The total number of affirmative votes cast for the bond proposal by registered voters in the applicable district. The variable is expressed as the actual number of "yes votes." (F6.0-columns 25-30).
6. "NO" - The total number of negative votes cast against the bond proposal by registered voters in the applicable district. The variable is expressed as the actual number of "no votes." (F6.0-columns 34-39).

C. SOURCES

1. For Alameda County: Alameda County Registrar of Voters, Oakland, California (Sample = 77% of total municipal bond elections during the period).
2. For Contra Costa County: Contra Costa County Registration-Election Department, Martinez, California (Sample = 48%).
3. For Marin County: Marin County Registrar of Voters and Marin County Superintendent of Schools, San Rafael, California (Sample = 60%).
4. For San Francisco County: San Francisco City and County Registrar of Voters, San Francisco, California (Sample = 100%).
5. For San Mateo County: County of San Mateo, Office of the County Clerk, Branch Office, San Mateo, California (Sample - 84%).
6. All county data was supplemented by the California Teachers Association's "Result of Tax, Bond and Loan Elections in California School Districts" (Burlingame, California: California Teachers Association), Bulletins 212,228,251 and 226.

APPENDIX B

STATISTICAL ANALYSIS OF INTEREST RATE AND VOTER IMPACTS IMPACT OF BART BOND ISSUE

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Appendix B

STATISTICAL ANALYSIS OF INTEREST RATE AND VOTER IMPACTS IMPACT OF BART BOND ISSUE

I. SUMMARY: HYPOTHESES REGARDING FISCAL BEHAVIOR

The purpose of this statistical analysis was to test three hypotheses. The hypotheses and findings regarding the impact of BART's bond issue on other public financing include the following:

- The hypothesis that BART debt increased general obligation debt ratios and thus increased interest rates on other general obligation bonds is supported statistically, but not convincingly.
- The hypothesis that BART, because it represented a substantial investment in infrastructure, increased prospects for improved efficiency and economic development and thus lowered other debt costs was rejected.
- The hypothesis that BART's debt-related tax burden decreased voters' willingness to approve bond issues, or diminished their support of other spending programs; or that local officials responded to a perception of such voter attitudes was not accepted.

In addition, a quantitative relationship between interest costs and BART burden has been identified.

II. ANALYSIS OF BART'S IMPACT ON BOND INTEREST RATES

A. Methodology and Results

The research task was to attempt a quantitative estimate of the impact of BART debt on the cost of financing other local bonded indebtedness in the BART counties, over the period 1962 to 1972.

Measures were constructed for the interest cost of an issue and the national, state and local determinants of that cost. The measure of the cost of an issue is the "net interest cost" (NIC) bid for the bond issue. The difference between the Bond Buyer's 20-bond index and the three-month Treasury bill yield for the same period was used to measure the effects of the national bond market. State effects were measured by the difference between the mean weekly yields of California "A"-rated 20-year bonds and the Bond Buyer's 20-bond index. Two measures for local effects were used. The first was the ratio of direct and overlapping debt for the district that issued the bond to the assessed valuation of that district. The second was the par value of the bond issue.

The statistical analysis of 617 bond issues indicated that none of these variables is important in explaining changes in net interest cost over the period. The main reason for this lack of association may be the absence of bond ratings as an explanatory variable for net interest costs, although bond ratings were not included because of the similarity of ratings among regional agencies, all in the highest categories.

The data set was partitioned into BART and non-BART counties and, in the BART counties, the total debt burden was separated from that part due to BART debt.

The statistical analysis for the 330 issues in Alameda, Contra Costa and San Francisco counties is shown in Table II-1. The statistical analysis indicates that 40 percent of the variability in net interest costs is explained by the burden of BART debt. The other four determinants as a group explain an additional 3.3 percent of the variability. Over 56 percent of the variability is unexplained by the variables used in the regression equation.

The equation indicates that, for every 10 percent increase in BART burden, there is an increase of 1.6 points (i.e., 0.016 percent) in net interest costs. The 95 percent confidence interval for the change in net interest costs due to a 10 percent increase in BART burden extends from 1.4 points to 1.85 points.

Table II-2 summarizes the results of the individual county analysis.

Table II-1
INTEREST RATE ANALYSIS FOR BART COUNTIES

<u>Variable</u>	<u>Variation in Net Interest Costs (R^2)</u>
BART Burden	0.398
BT (BB - TBILL) ¹	0.012
CB (CAL - BB) ²	0.011
PAR VAL	0.008
Non-BART Debt Burden	0.002

¹Bond Buyer Index minus Treasury Bill yield for one month.

²California Index minus Bond Buyer Index.

Source: McDonald & Grefe, Inc.

Table II-2
INTEREST RATE ANALYSIS FOR INDIVIDUAL COUNTIES

<u>County</u>	<u>Significant Variables</u>	<u>BART Burden Variation in Net Interest Costs (R^2)</u>	<u>Impact of a 10% Increase in BART Burden</u>
ALAMEDA	BART Burden	0.36	1.71 Points
	National Effects	N.A.	
	Par Value of Issue	N.A.	
CONTRA COSTA	BART Burden	0.39	1.79 Points
	National Effects	N.A.	
SAN FRANCISCO	BART Burden	0.70	1.96 Points
	National Effects	N.A.	
	Non-BART Burden	N.A.	

Source: McDonald & Grefe, Inc.

B. Conclusion

In each BART county, the ratio of BART debt to assessed valuation is by far the most explanatory factor in explaining changes in the costs of bond issues. In general, the par value of the issue, the non-BART measures of the determinants of local effects, and the measure of state bond markets' effects were of little or no significance in explaining the costs of bond issues. The measure of national market effects was significant in each county, but was always less than one-fifth as powerful as BART burden in its contribution toward explaining bond interest rates.

BART debt was most significant in San Francisco County. This was the only county in which the regression equation was at an acceptable goodness-of-fit level.

Caution is required in placing reliance on the quantitative relationships that were estimated. BART debt is one important determinant of the bond interest rates. As BART debt increased, bond interest rates increased. Beyond this statement, the estimates should be viewed only as an order of magnitude estimate of the quantitative relationship.

III. BART'S IMPACT ON THE AMOUNT OF OTHER DEBT ISSUED (THE CROWDING-OUT EFFECT)

The previous section analyzed the impact of BART on the cost of other bond funding during the period 1962-1972. Another aspect of the cost of borrowing is the opportunity cost, considering whether the existence of BART debt prevented counties from issuing debt they would normally have issued in the absence of BART. Conventional wisdom in the bond market includes the notion that a county can only carry a certain amount of debt in relation to its assessed valuation. Incurring substantial debt for BART could crowd out other debt that would have been incurred in the absence of BART.

A. Methodology and Results

Measures were constructed of total debt and BART debt at the time of each issue to determine how total debt varied as BART debt increased in each of the BART counties over the period 1962-1972. The measure of total debt was the ratio of the total direct and overlapping debt of the district issuing the debt to the assessed valuation of that district. The measure of BART impact was the ratio of the amount of BART debt in the district to the district's assessed valuation. The results are shown in Table III-1.

Table III-1
THE ANALYSIS OF "CROWDING OUT"

	<u>All BART Counties</u>	<u>Alameda</u>	<u>Contra Costa</u>	<u>San Francisco</u>
Increase in the ratio of total debt to assessed value following a 10% in- crease in BART debt ratio	9.2%	11.5%	10.2%	8.2%
Crowding Out	0.8%	- 1.5%	- 0.2%	1.8%
R^2 of the regression	0.23	0.69	0.16	0.90

Source: McDonald & Grefe, Inc.

The analysis of all BART counties indicates that a 10 percent increase in BART debt to assessed value ratio is associated with a 9.2 percent increase in total debt to assessed value ratio. This indicates almost no crowding out. This conclusion is reinforced by inspecting each BART county separately. For each of the BART counties, the constant term in the regression equation is almost identical to the all debt ratio in the base year (1962) and the coefficient of BART ratio is approximately 1.0. Hence, if the debt ratio in the base year represents the "normal" debt ratio in each county, then there was¹ little or no crowding out created by the financing of BART.

In fact, in Alameda County, an increase of 10 percent in BART debt ratio resulted in an 11.5 percent increase in the "normal" debt ratio. That is, according to the equation, BART had an expansionary effect on the willingness of Alameda County to undertake debt. The largest indication of crowding out occurred in San Francisco. Here, a 10 percent increase in BART debt ratio was associated with an 8.2 percent increase in total debt ratio, or 1.8 percent reduction in the baseline debt ratio.

B. Conclusion

The analysis indicated that there was little or no crowding out from the financing of BART. BART did not appear to exact an opportunity cost reducing the use of debt for other activities that would normally be funded by bonded indebtedness, and BART may have had the direct impact of causing a very slight increase in the interest rates on new issues in BART counties.

¹This conclusion could be strengthened by looking at debt ratio for pre-BART years.

IV. ANALYSIS OF BART'S IMPACT ON VOTER BEHAVIOR

The task was to ascertain whether there was a correlation between the willingness of voters to pass general obligation issues and tax levels (including BART taxes).

Indices of voter behavior were used to see if there is a statistical relationship between voter responses and local tax levels. Three indices were created:

$$\text{INDEX 1} = \frac{\sum (\text{yes votes})}{\sum (\text{total votes})} \times (\$ \text{ par value of proposal})$$

The sum is taken over all proposals brought to election in a county in a year. Hence, for the period 1962-1972 there are eleven values for each of five counties. This index has values from zero to one.

$$\text{INDEX 2} = \sum \left(\frac{\text{yes votes}}{\text{total votes}} \right) \times \$ \text{ par value of proposal}$$

$$\text{INDEX 3} = \frac{\text{Index 2}}{\sum (\$ \text{ par value of proposal})}$$

Sales and property taxes were used as the measure of local taxes. They were stated on a per capita income basis in each county to reflect the burden on individual voters. Median household income would have been preferred to per capita income but was unavailable on a special district-by-special district basis.

The first analysis considered the relationship between the indices of voter behavior and the sum of sales and property tax burden. Another analysis separated this tax burden into a BART and non-BART burden to attempt to measure the impact of BART on voter behavior.

The regression analysis indicates there is no relationship between INDEX 1 and the total tax burden when all counties are taken together. This tends to refute the notion that voters' willingness to pass general obligation issues is related to their local tax burden.

Other explanations for no relationship partially include a faulty index, data that were too collapsed (eleven points per county, when the county is generally not the district proposing the issue), and too narrow a concept of tax burden (inclusion of state and federal tax burdens could be helpful).

When the data are partitioned to focus on behavior in BART counties together and non-BART counties together, the result is the same -- local tax burden does not statistically explain changes in the voter behavior index.

When the data are partitioned further to focus on each county separately, there is a surprising result. Local tax burden fails to be associated with voter behavior in Alameda, Contra Costa, San Mateo and San Francisco. However, local tax burden in Marin County (a non-BART county) is a statistically significant determinant of voter sentiment, with 78 percent of the variability in the first voter behavior index being explained by changes in local tax burden.

It should be noted that all but one proposal in Marin County are for school bonds. In fact, school bonds are the most prevalent type of bond proposal in the data set.

When INDEX 2 was used, there was no statistical relationship between local tax burden and this measure of voter sentiment. This held for all partitions of the data set: all counties together, BART counties together, non-BART counties together, and each county separately.

When INDEX 3 was used, there was a somewhat different result. For all counties together and for non-BART counties together, there was no statistical relationship. However, for BART counties taken together, there is a positive, but weak correlation (correlation coefficient of 0.38). When each county was analyzed separately, there was little correlation between local tax burden and voter sentiment, with the exception of Marin County again. Given a correlation coefficient of -0.88 and an explanatory power of 78 percent, one can conclude that voters in Marin County do take cognizance of their local tax burden when they vote on local bond proposals. This reinforces the earlier observation that the survey should include questions on how voter behavior may vary from county to county.

The conclusion from the statistical analysis is that voter sentiment is generally unrelated to local tax burden.

V. ANALYSIS OF BART'S IMPACTS ON NONVOTED DEBT

This section presents an attempt to discuss whether higher taxation leads to a reluctance of decisionmakers to put important projects to a vote. Nonvoted debt was used as a proxy for reluctance to put projects to a vote and an attempt was made to find a relationship between nonvoted debt, present tax burden and voter sentiment.

For this approach to be meaningful, substitutability must exist. That is, decisionmakers must have discretion over whether to fund a project by bringing a proposal to the voters or to fund the project with nonvoted debt. That option was not generally available during the period 1962-1972 for the type of issues used to create the voter index (school bonds, water and sewer bonds, transportation bonds, etc.).

A further problem is the paucity of data. Of the 55 cases to use for testing this hypothesis, only 15 have values for nonvoted debt.

APPENDIX C

INTERVIEW PLAN FOR EVALUATING IMPACT OF BART GENERAL OBLIGATION DEBT ON OTHER BAY AREA TAX SUPPORTED DEBT

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BACKGROUND

The Metropolitan Transportation Commission of the San Francisco Bay Area is conducting a federally financed study to evaluate the impacts of Bay Area Rapid Transit (BART) on the bay area. The study evaluates BART's impact on many facets of political, social, and economic life in the bay area. To improve future transit planning, the report will be distributed nationally.

As part of this study, we at Bartle Wells Associates, are studying how BART general obligation debt affected financing costs for other tax supported debt in the bay area. Between 1963 and 1969 BART issued \$792 million of general obligation debt. For the three counties served by BART this general obligation in 1969 represented between 40 and 75 percent of the total tax supported debt of local governments going to the municipal bond market.

Statistics do not tell the story of how the financial community evaluated BART and what difference, if any, BART made. BART is the largest predominately locally financed public works project ever built in the United States. Through bids on bonds offered by public entities in the bay area, the financial community presumably reacted to the debt burden created by BART bonds. However, our preliminary statistical work shows very little, if any, difference in the interest costs to issuers which bore BART debt versus interest costs to those who did not. We need the help of others in the financial community--analysts, portfolio managers, and underwriters--to be able to understand how BART's financing impacted on the fiscal soundness and economic vitality of the bay area.

The following questionnaire and exhibits attempt to elicit as complete responses as possible about BART's impact on other bay area financing. We ask that, if appropriate, you consult with your associates about some of the questions, in order to reflect how the financial community actually viewed BART debt at various times, in the past, rather than how it may view that debt today.

To conserve your own time, please circle items or make margin notes by way of answer.

Reply to: Mr. Raymond K. O'Neil
Vice President
Bartle Wells Associates
100 Bush Street
San Francisco, California 94104

1. Before examining BART's debt in particular we'd like to find out what your role was or is in evaluating bond issues by bay area entities.

Are you a:

- a) bond analyst
- b) portfolio manager
- c) financial advisor
- d) broker
- e) other _____

2. Have you ever evaluated or marketed a BART general obligation bond?

- a) yes
- b) no

3. If "yes", do you recall specifically the issue date and what your market advice or evaluation was? Please summarize.

4. Would you amend that advice in light of what you know about BART today?

- a) yes
- b) no
- c) How? _____

5. Have you also evaluated or marketed tax supported bonds issued by other public entities in the bay area?

- a) yes
- b) no

6. Which are the principal issues of this kind which you recall?

_____ year _____

_____ year _____

_____ year _____

7. Was BART debt given specific consideration in your evaluation or advice on the nonBART bonds?

a) yes, on the issue of _____

b) no, on the issue of _____

8. If you just answered "yes", what impact did you attribute to BART debt at the time?

9. Over the 1962-1972 period, about how many people in your firm evaluated bay area securities?

10. On the average, how many years did each of them evaluate bay area securities?

11. Did you or your firm ever, at any time, prepare a detailed analysis of BART's effect on the bay area or bay area bond issues?

- a) yes
- b) no
- c) May we have a copy for reference?
- d) May we have a copy for exhibit?

12. Have you or your firm recently reevaluated BART or the bay area economy?

- a) yes
- b) no
- c) If so, when?
- d) Why did you do it? _____

- e) Does it significantly differ from earlier evaluations? (yes) (no)
- f) In what respect? _____

13. Do you feel we should talk with any other person either in your firm, or out, who might complement your viewpoint?

Name _____ Location _____

Name _____ Location _____

14. (See Exhibit 1) Exhibit 1 plots three market indicators over the period 1962-1972. Perhaps, the three-month Treasury bill rates and Bond Buyer 20-bond index are most familiar to you. The California index was not published over this period. This index is compiled by the Bank of America for its internal use. It is based on actual sales and trading data and is the yield to be expected on a 20-year California "A"-rated bond.

Exhibit 1 seems to say that on the average a California issuer can expect to pay lower interest costs than issuers elsewhere in the nation. Is this true?

- a) yes
- b) no

15. In what respect do California municipal securities differ, if at all, from those of other local issuers in the rest of the nation?

16. Are there factors about California local government or the California economy which you believe may tend to raise or lower interest costs for California issuers?

_____ (raise) (lower)

_____ (raise) (lower)

_____ (raise) (lower)

17. (See Exhibits 2,3,4,5,6) We've looked at the costs of borrowing experienced in five bay area counties--three BART counties and two non-BART counties. Issuers in all five counties seem to sell at very comparable interest rates, yet the debt ratios in BART counties are significantly higher than in nonBART counties. We recognize that NIC bids are affected by many factors. But, limiting your view to debt ratios do you feel that debt ratios had an adverse impact on BART county issuers?

a) yes

b) no

c) If "yes" how do you believe the impact was felt? _____

18. Do you recall any specific debt issues which may have been positively or negatively affected by BART?

a) yes

b) no

c) How might any negative effect been mitigated? _____

19. If you think the effect of BART debt is unmeasurable or imperceptible, can you suggest why? _____

20. Was the effect of BART debt ratios offset by a positive market appraisal of the effect of BART on the economic vitality of the area?

- a) yes
- b) no
- c) Offset by other factors, e.g. _____

21. Did the general creditworthiness of other issuers in the BART counties simply prevail over concerns about debt burdens?

- a) yes
- b) no
- c) Yes, at least for the City and County of San Francisco.
- d) Yes, at least for the fast growing suburban areas along BART.

22. Would you note any other factors which may have heightened or lessened the effects of BART debt burdens on the creditworthiness of BART county issuers? _____

23. (See Exhibit 7) Up to now we've talked about BART as a fixed unchanging agency. At least in the bay area, BART generated considerable controversy over financing and doubt over whether the project would ever be completed. The period of mid 1966 to early 1969 was particularly critical since BART had no assured revenues for completing its project.

a) Did you evaluate BART during this period? If so, when? _____

b) Do you recall the controversy and, if so, how did it affect your evaluation of BART securities? _____

c) How did it affect your evaluation of securities issued by other bay area entities? _____

24. Which one or more of these statements then characterized your evaluation of the 1966-1969 controversy surrounding BART's continued financial soundness:

a) Financial controversy cast serious doubt on BART's ability to meet its obligations.

- b) Financial controversy jeopardized BART's ability to complete the system as planned and raised grave concern that BART debt would unfavorably burden other bay area issuers.
- c) BART's alleged management problems reduced the realizable benefits of the system.
- d) BART's cost overruns and delays were typical of other large public works projects.
- e) BART would, in spite of cost overruns and delays, have a substantial positive impact on the bay area.
- f) The underlying economic strength of the bay area outweighed any concern over BART's continued financial soundness.
- g) Press and political criticism of a project of BART's size is not unusual and did not affect the financial community's evaluation of BART or its impact on the bay area.
- h) Compared to other economic and political problems in the nation, the BART controversy was only a tempest in a teapot.
- i) Other evaluation _____

25. (See Exhibits 8,9,10,11,12) These exhibits compare the mean NIC of bay area issuers to the California index. Prior to 1969 the bay area seemed to pay higher interest cost than other California issuers whereas after 1969 this relationship is reversed. Which of these statements, if any, helps to explain why this happened?

- a) Along with the upgrading of the State of California's rating, a general upward reappraisal of urban California issuers occurred.
- b) In the tight money market of 1969 only the most creditworthy issuers came to market, thus the trading index is not a valid comparison.
- c) BART's imminent opening caused a significant upgrading of all bay area securities.
- d) The bay area proved unusually resistive to unemployment or other symptoms of economic weakness.
- e) The decline in relative borrowing cost was caused mostly by:

26. Looking back on this interview and the possibilities it raises, how would you comment upon each of the following statements about the 1962-1972 period?

a) BART debt initially enhanced creditworthiness of local government in the BART service area, but financial and operational problems with BART later removed any favorable effect.

b) BART debt represented an infrastructure investment which increased the creditworthiness of BART county issuers.

c) The capital invested in BART could have been invested in better highways with as great or greater a favorable impact on the bay area as in rapid transit.

d) BART debt burdened taxpayers beyond their willingness to pay and lowered the creditworthiness of BART county issuers.

e) BART's debt burden necessitated a greater than usual marketing effort in offering other bay area securities in order to explain to the financial community the benefits of BART.

f) BART's experience will favorably affect market reaction to tax supported securities in other urban areas which build rail rapid transit systems.

g) The financing community was essentially indifferent to debt levels created by investment in rail rapid transit.

h) Other comments.

i) Considering the period from 1973-1976, would you respond differently to any of the previous statements a through h?

27. BART may have represented a departure from the usual California emphasis on freeway development, at least as perceived by the financial community. Would you comment on each of the following statements from the standpoint of analyzing or marketing bay area securities today?

a) BART's centralizing influence made the entire bay area stronger economically.

b) BART's investment made the bay area into a more cohesive, but still dispersed, metropolitan area. _____

c) BART conferred benefits principally to agencies directly served by the BART lines at the expense of areas not served directly by BART. _____

d) BART was more beneficial to the suburban communities than to the central ones. _____

e) Other comments. _____

28. If you had to estimate the effect of BART debt on municipal issuers in BART counties, how would you appraise its effect on NIC bids year by year? Please use Exhibit 13 to note your appraisal.

29. After observing the BART experience, what would you think if an issuer which you rate very highly announced plans to build a new, locally financed rapid transit system? Why? _____

30. Do you think this interview adequately explores the issue of the relation of BART to the creditworthiness of other entities?

- a) yes
- b) no
- c) Would you suggest other areas of investigation?

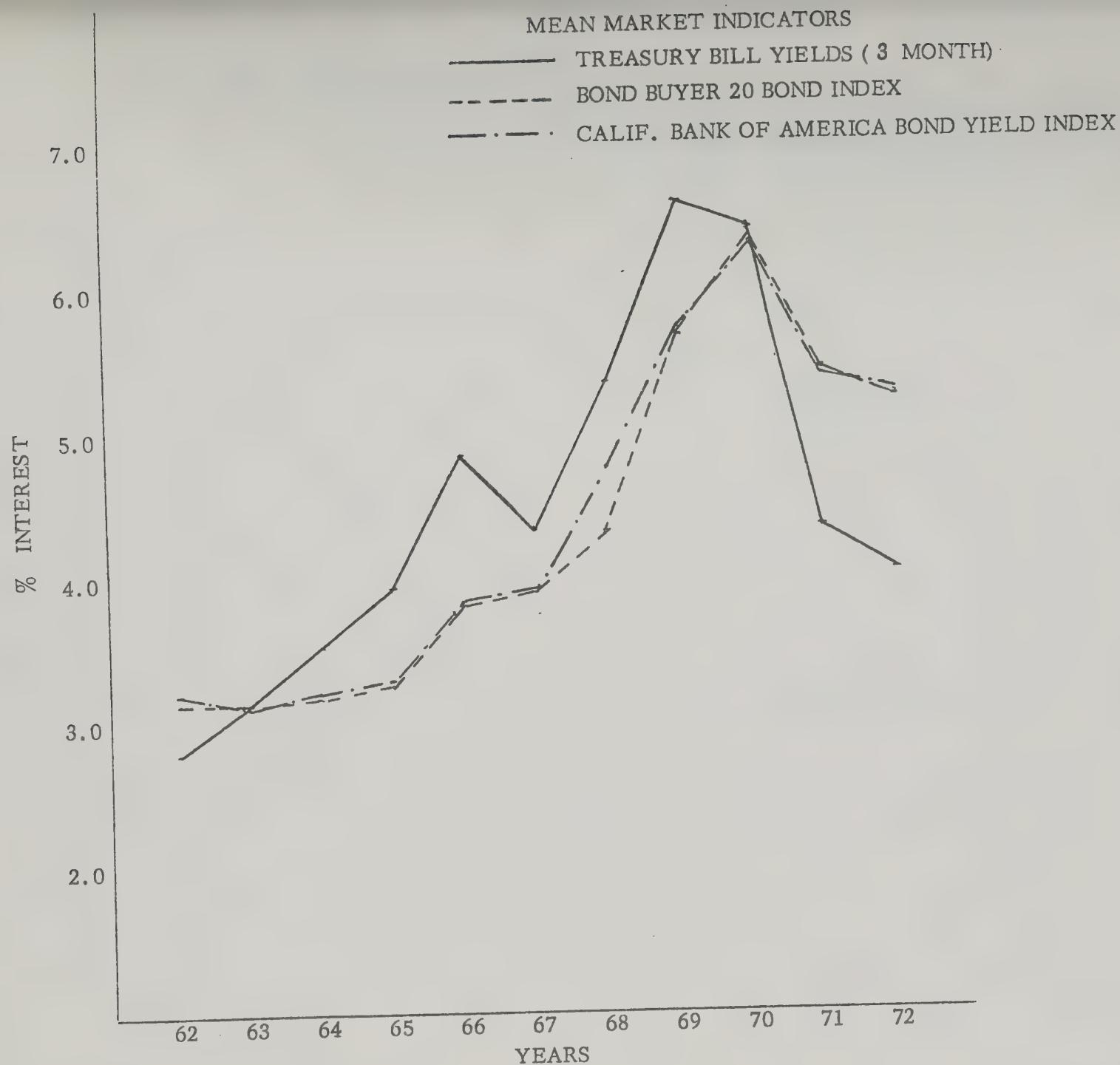
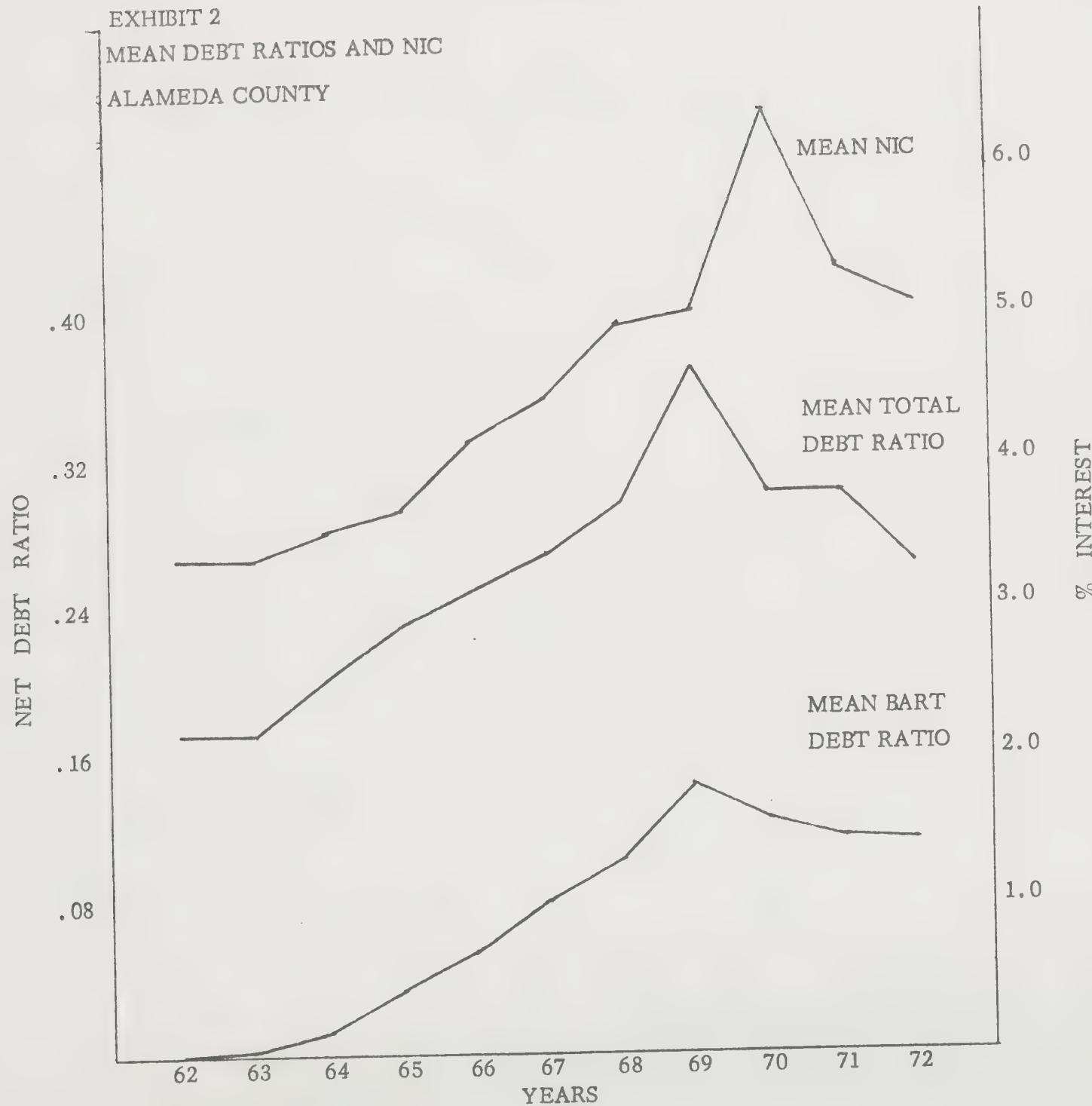


EXHIBIT 2
MEAN DEBT RATIOS AND NIC
ALAMEDA COUNTY

06



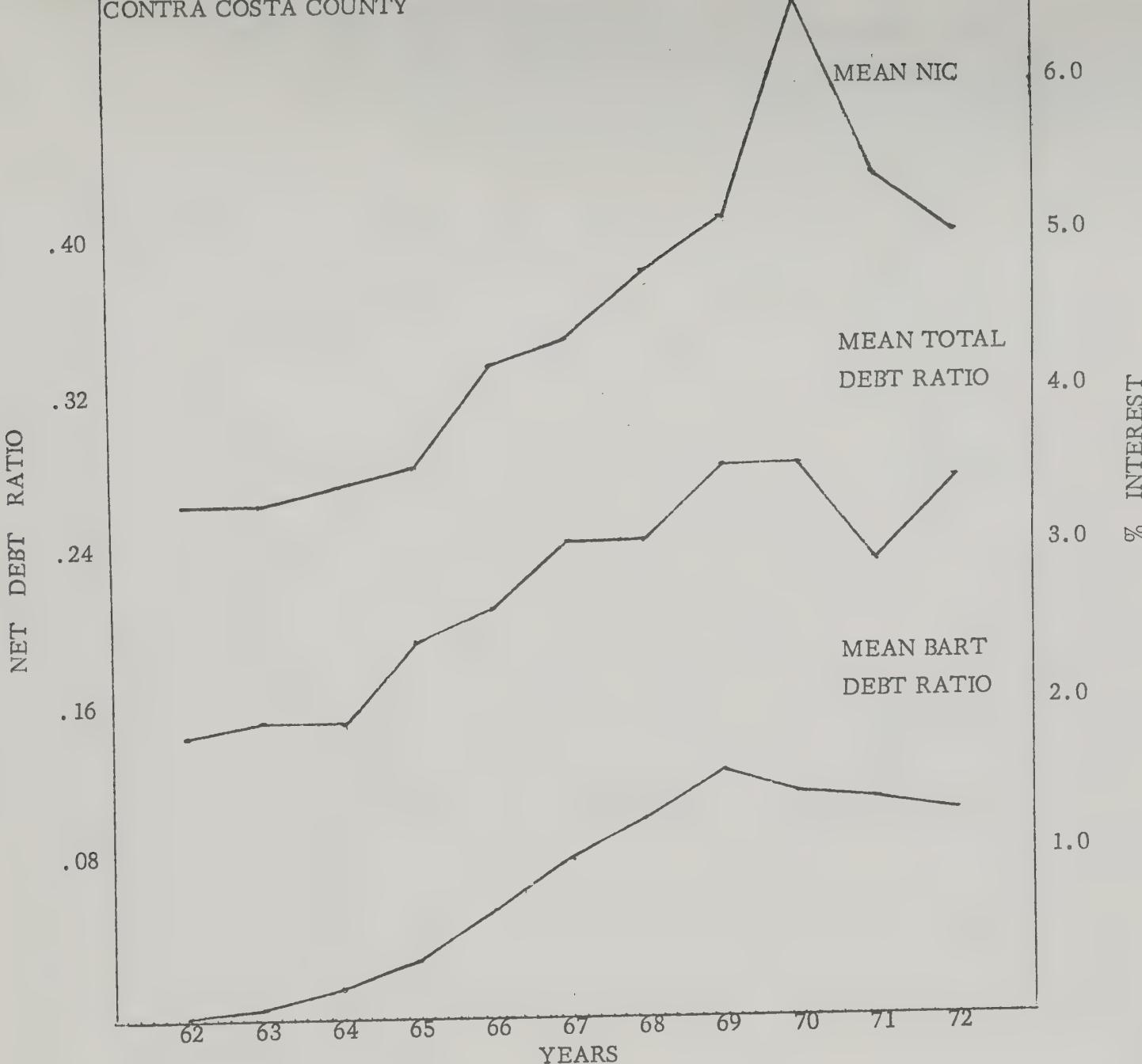
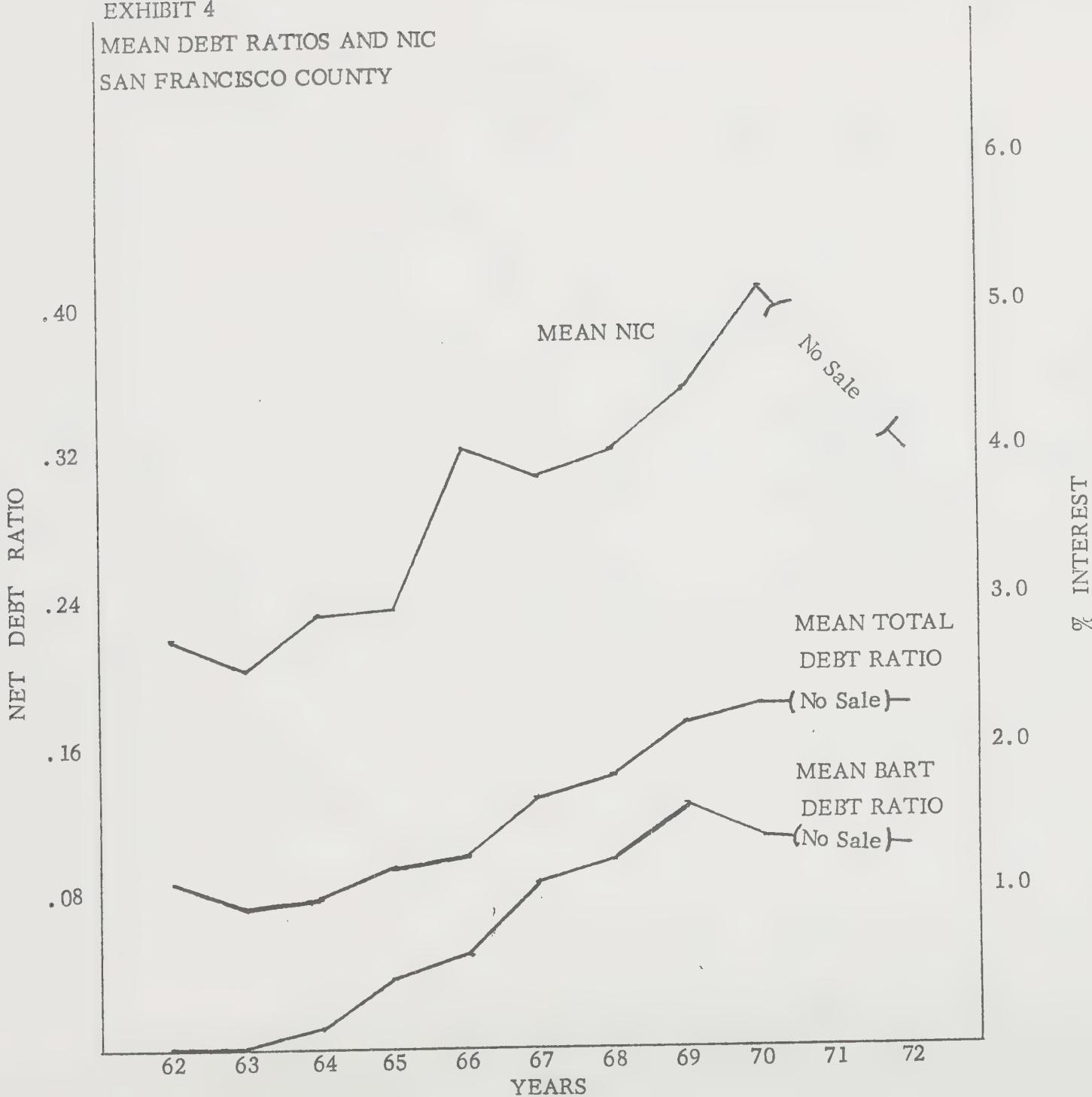
MEAN DEBT RATIOS AND NIC
CONTRA COSTA COUNTY

EXHIBIT 4
MEAN DEBT RATIOS AND NIC
SAN FRANCISCO COUNTY

92



MEAN DEBT RATIOS AND NIC
MARIN COUNTY

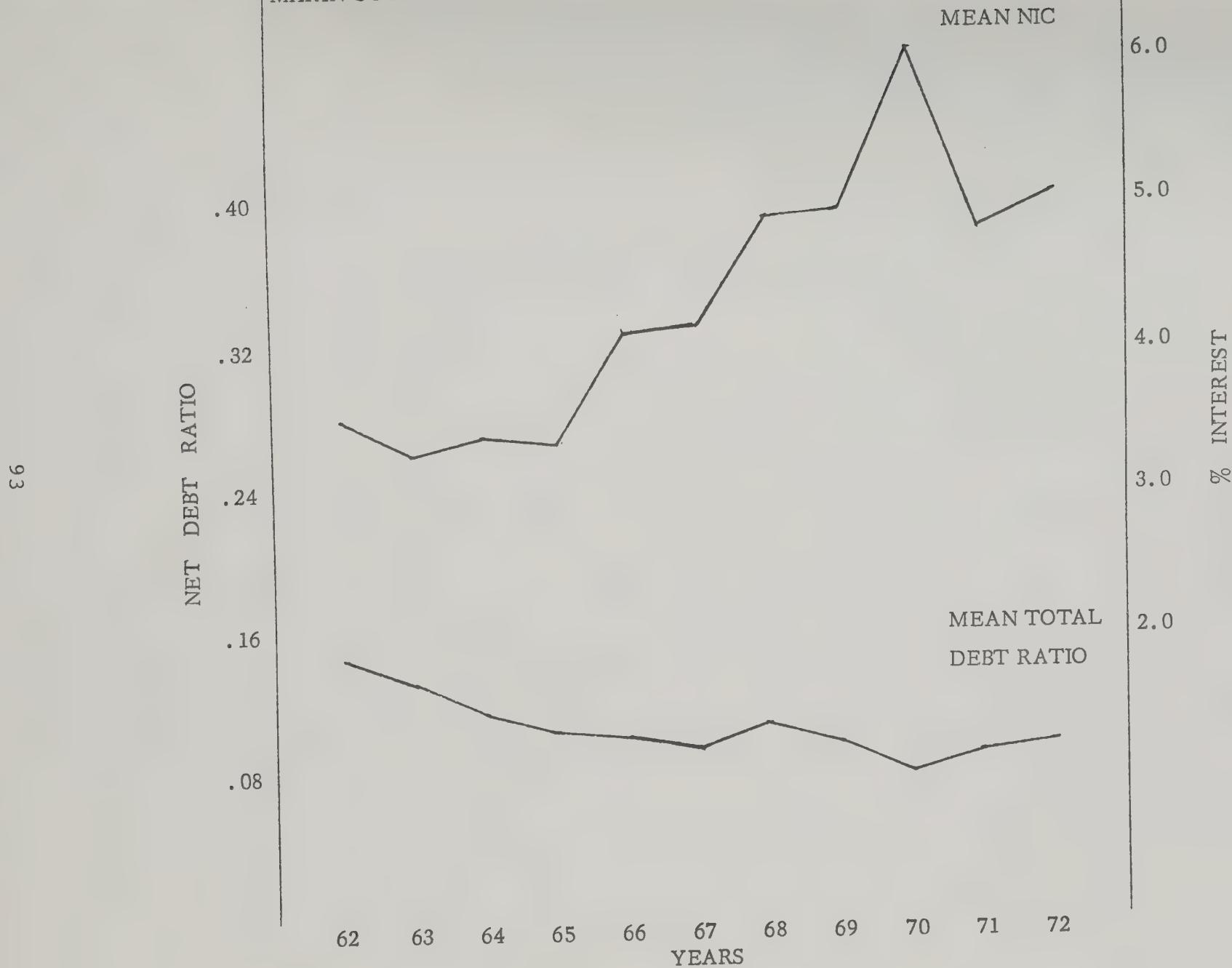


EXHIBIT 6
MEAN DEBT RATIOS AND NIC
SAN MATEO COUNTY

94

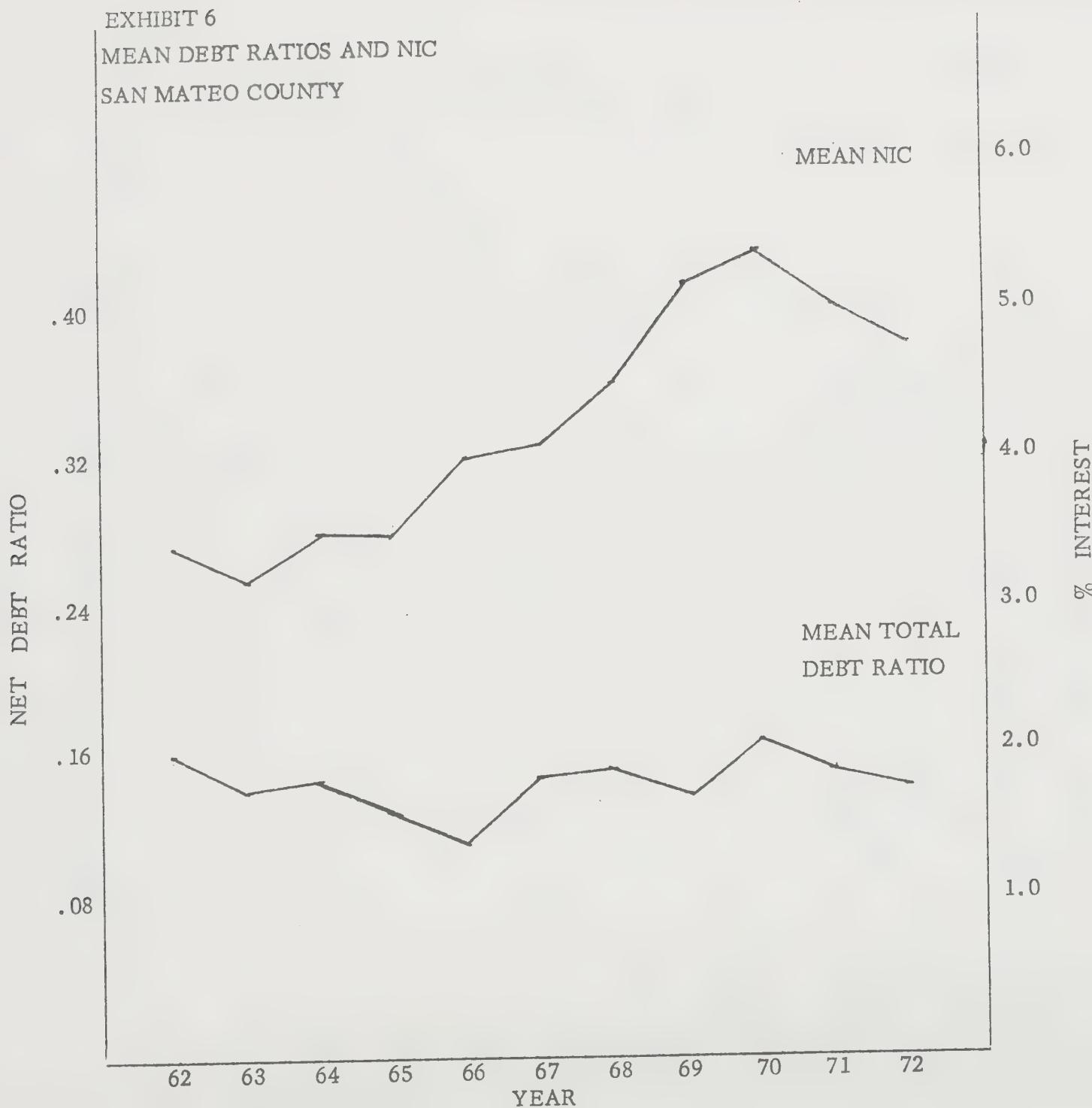
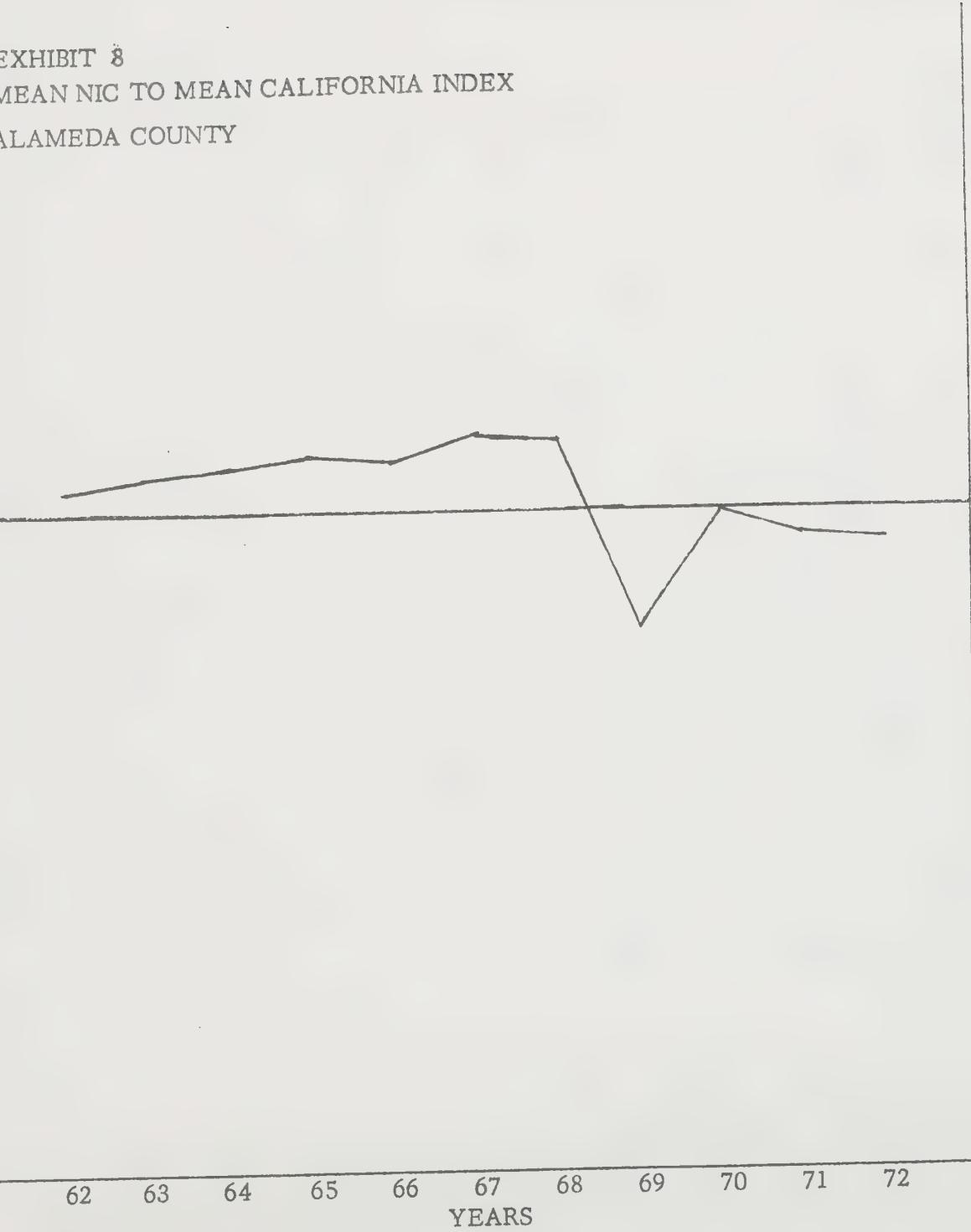


EXHIBIT 7
HIGHLIGHTS OF BART FINANCIAL HISTORY

1962	Voters approve \$792 million of general obligation bonds
1963	BART issues \$110 million to fund design
1964	
1965	First indication of likely cost overrun BART issues \$140 million BART begins cost control efforts
1966	Public projection of \$150 million capital shortfall BART publicly states it will complete the system BART begins search for more money BART issues \$50 million
1967	Period of uncertainty over source of additional capital
1968	BART issues \$350 million
1969	1/2¢ sales tax for BART approved BART issues \$142 million
1972	BART begins operations

(MEAN NIC - MEAN CALIFORNIA INDEX)
% INTERESTEXHIBIT 8
MEAN NIC TO MEAN CALIFORNIA INDEX
ALAMEDA COUNTY

MEAN NIC TO MEAN CALIFORNIA INDEX

CONTRA COSTA COUNTY

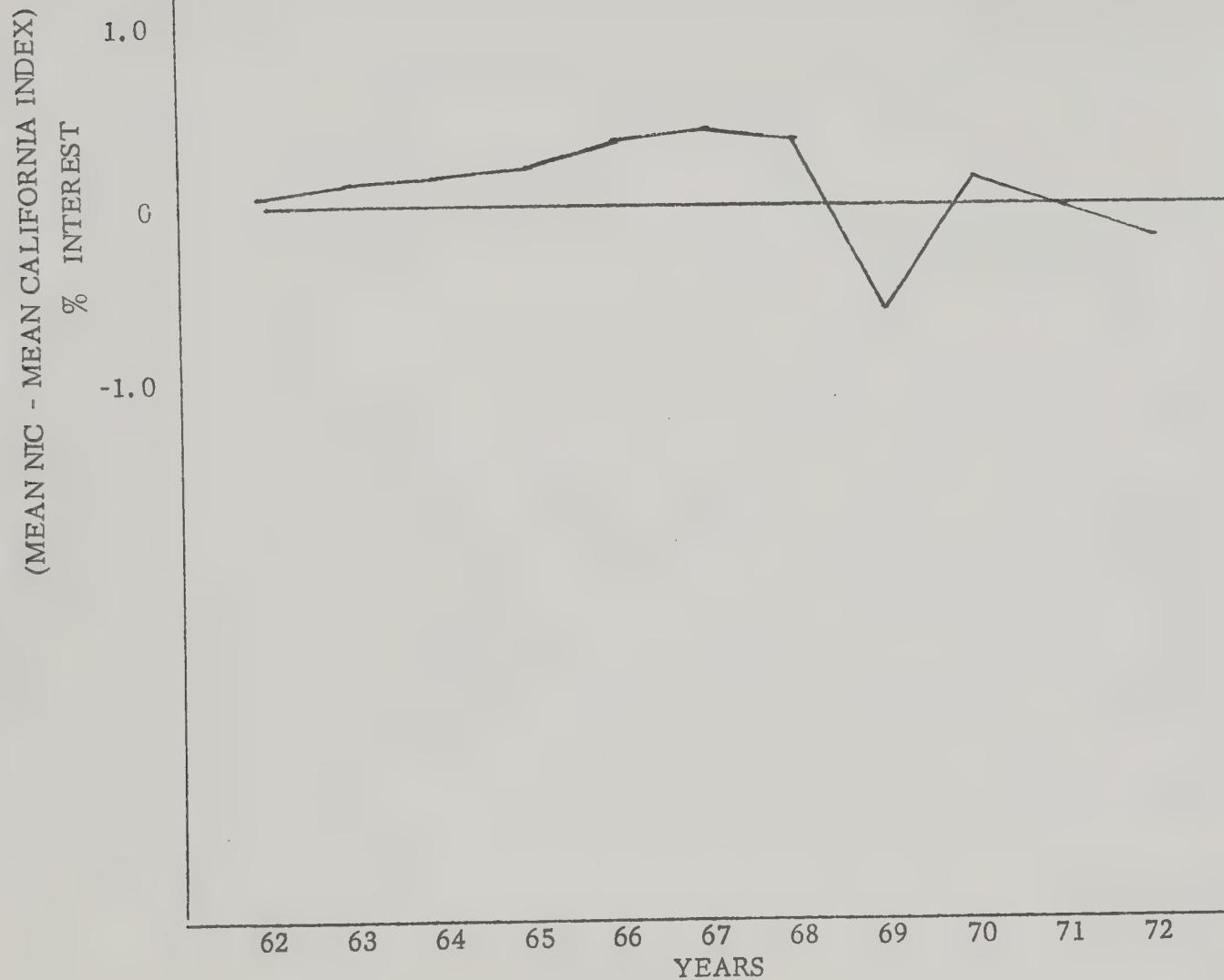
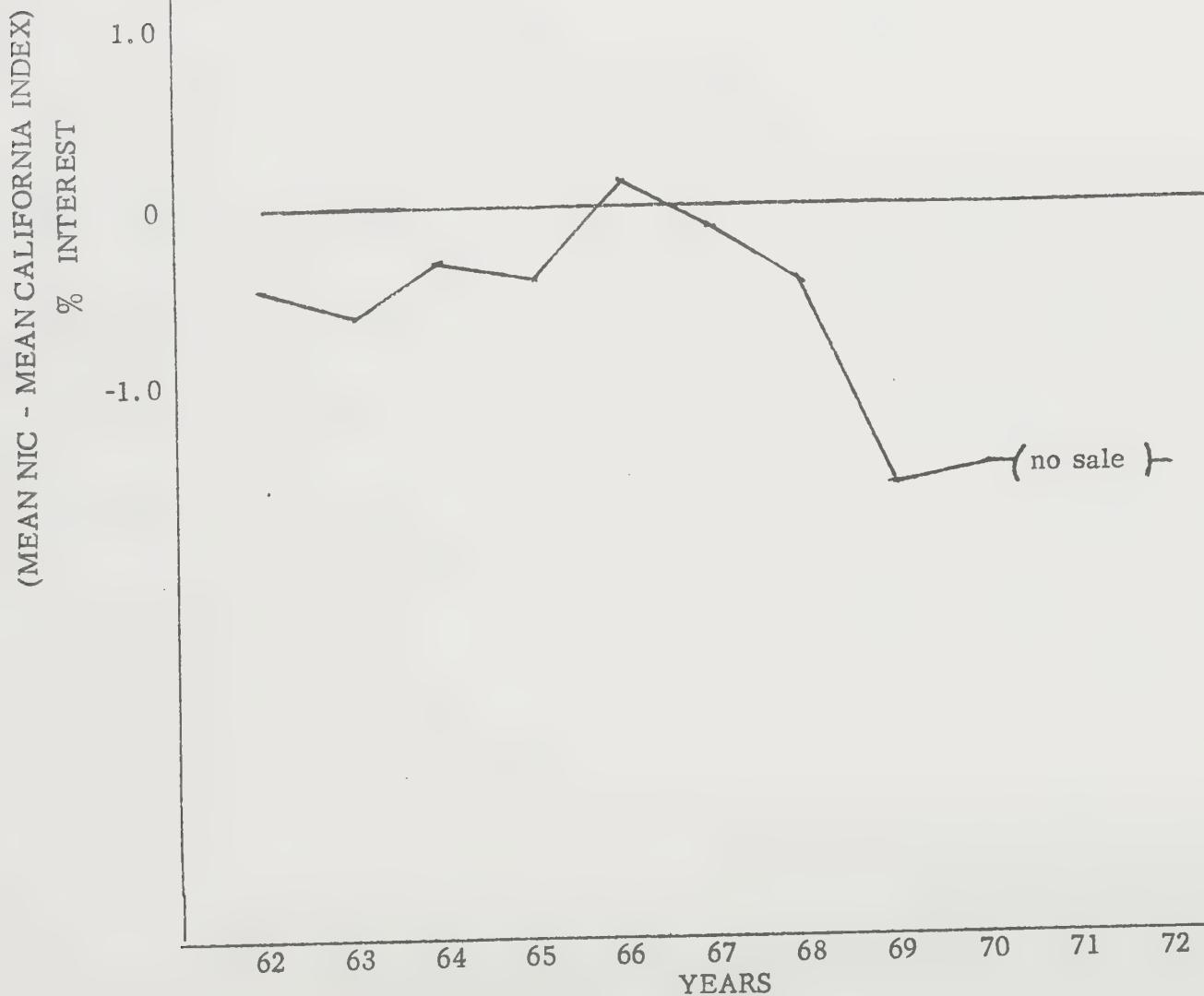


EXHIBIT 10
MEAN NIC TO MEAN CALIFORNIA INDEX
SAN FRANCISCO COUNTY



MEAN NIC TO MEAN CALIFORNIA INDEX

MARIN COUNTY

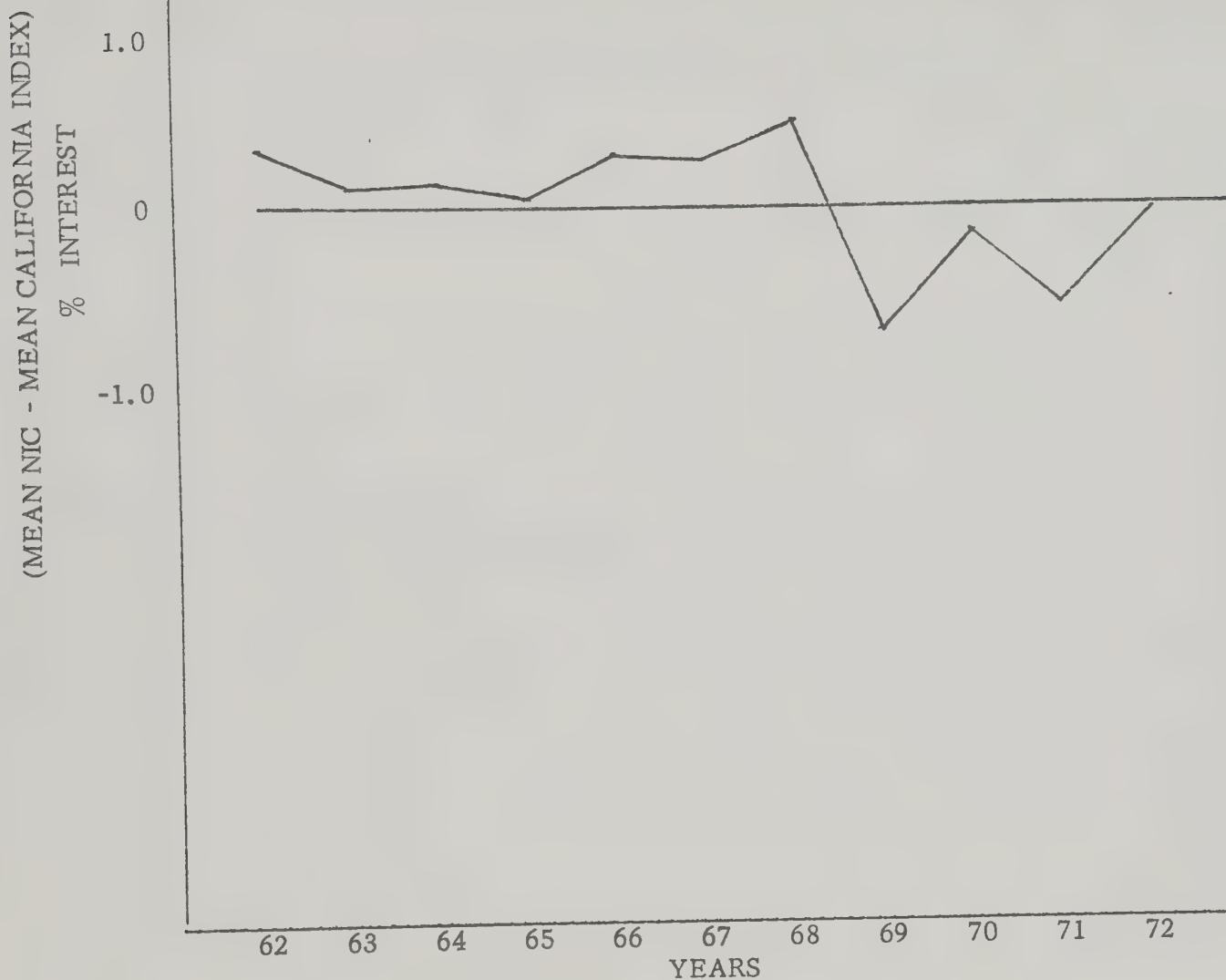


EXHIBIT 12
MEAN NIC TO MEAN CALIFORNIA INDEX
SAN MATEO COUNTY

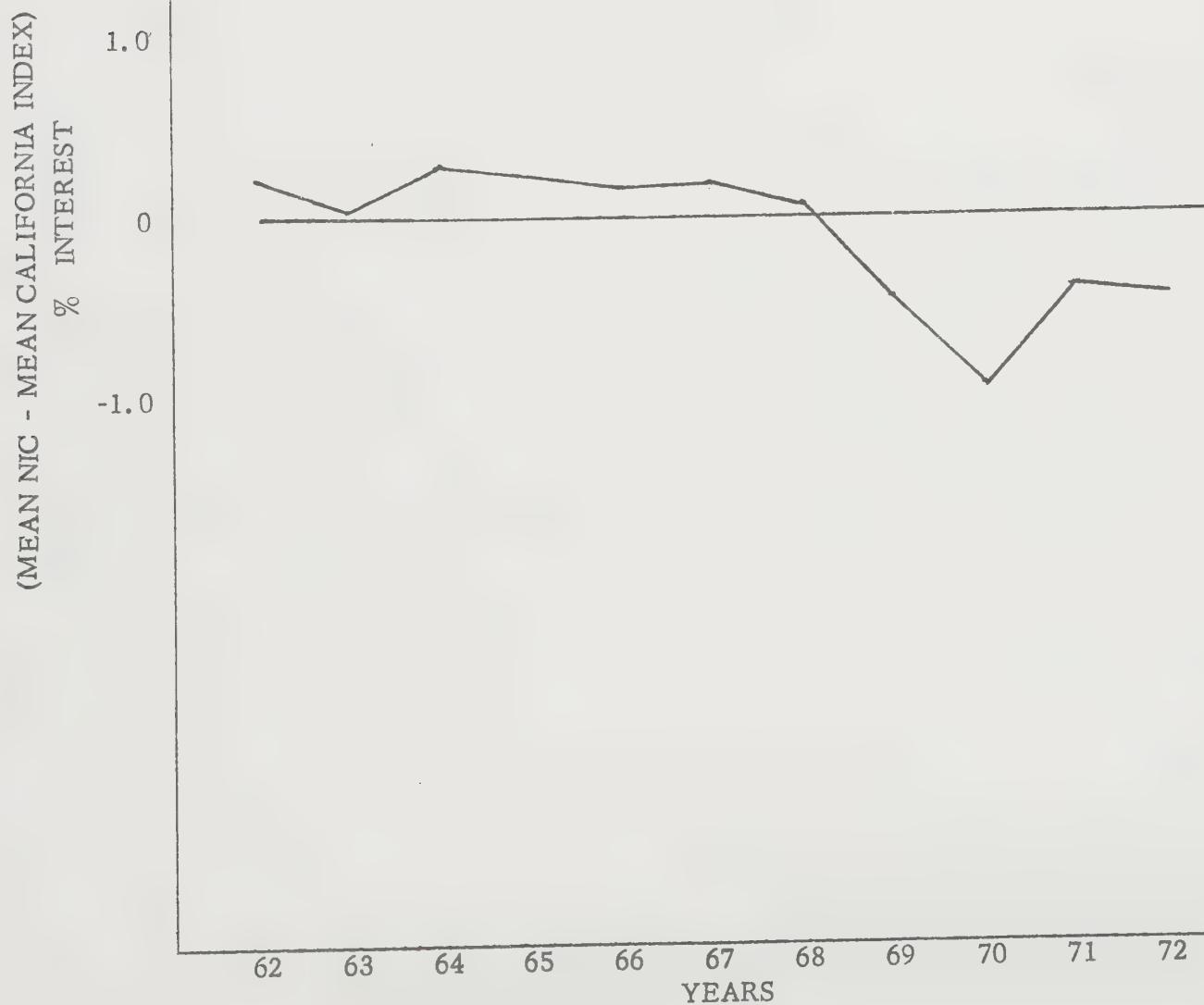
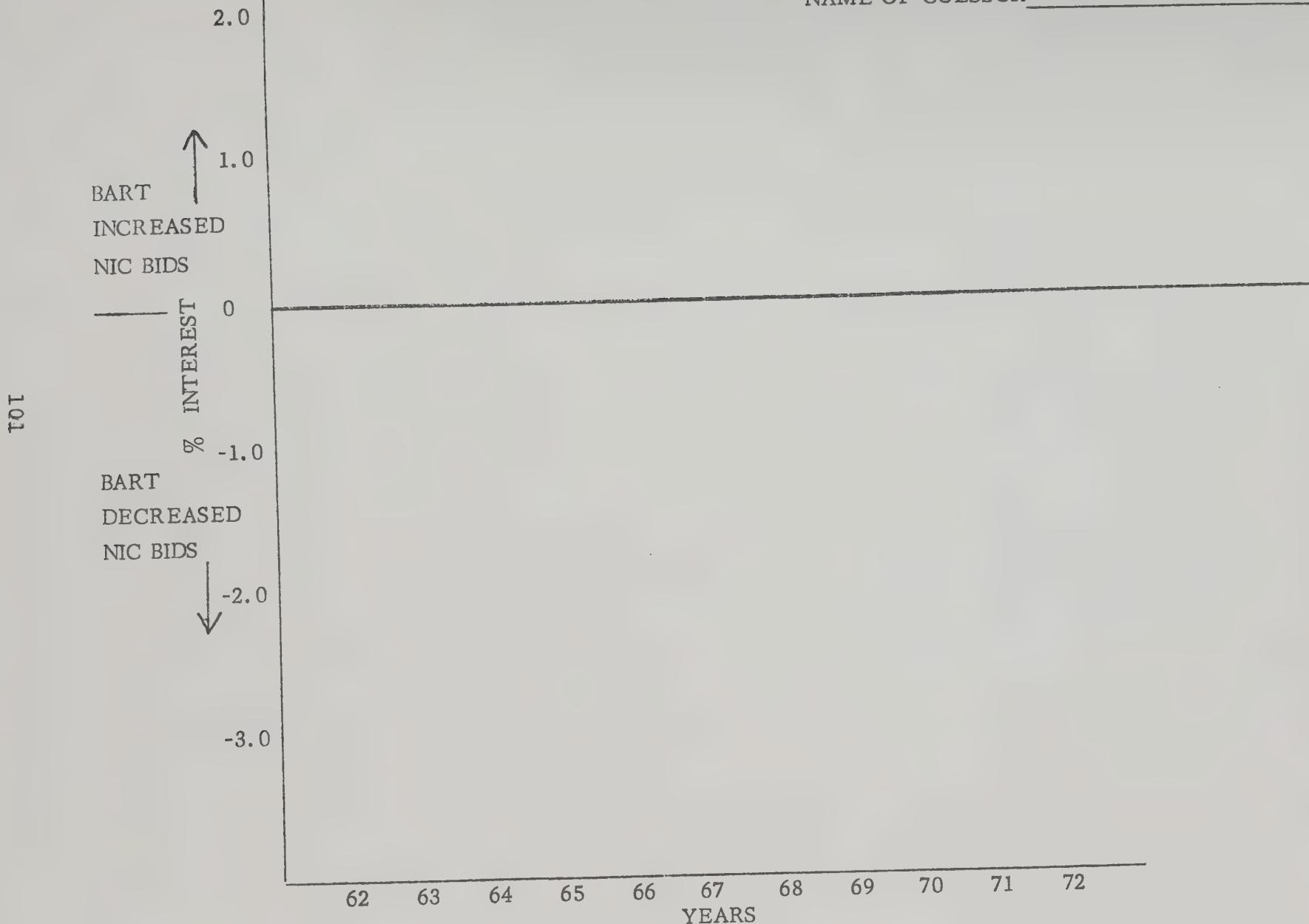


EXHIBIT 13

GUESSES ON BART'S IMPACT ON NIC BIDS
FOR BART COUNTY ISSUERS

NAME OF GUESSOR _____



APPENDIX D

INTERVIEW RESPONSE TO ISSUE OF
BART'S EFFECT ON COST OF BORROWING

Appendix D

INTERVIEW RESPONSE TO ISSUE OF BART'S EFFECT ON COST OF BORROWING

The interview form comprised 29 questions. Of these, eight inquired about the role of the respondent within the municipal bond industry. Table D-1 and the related text describes and summarizes the qualification section of the questionnaire. The remaining questions dealt with fiscal impact and are presented and discussed in the text which follows.

The presentation takes the following form:

- The question or a related cluster of questions is set out, often in an abbreviated form. A bracketed number shows the position of each question in the interview form.
- Where feasible, the answers received are then tabulated.
- Answers or answer details not readily tabulated are briefly discussed.
- The authors' analysis of the response concludes the discussion.

The authors' input here goes beyond counting and reporting responses. Because the authors conducted the interviews personally, their analysis includes the benefit of supporting discussion and side comment. In addition, the analysis has been used to state consensus and to interpret responses in the light of the authors' own experience.

The authors bring to the study nine years of experience in planning, designing and marketing bond issues for public agency clients. Their consulting services are provided through Bartle Wells Associates, an employee-owned firm which is wholly independent of the banking and investment community, and which neither holds nor deals in securities. The authors serve professionally as a communication link between agencies (and their design consultants) who need to issue bonds, bond counsel, bond analysts and rating agencies and wholesale buyers (banks and underwriters). The authors enjoy a relationship of mutual trust and candor with the persons interviewed and surveyed, and have interpreted responses in the light of their personal knowledge of what makes a bond marketable. The authors have, however, confined their own observations and knowledge to the paragraphs labeled as "analysis".

Table D-1

RESPONDENT CHARACTERISTICS

Respondent Identity Code						
1	2	3	4	5	6	7
1. What was your role in evaluating bonds issued by Bay Area entities?						
Underwriter/ trader	Underwriter/ trader	Underwriter/ trader	Bond analyst (ratings)	Bond analyst/ portfolio manager	Bond analyst/ financial advisor	Financial advisor
2. Have you evaluated/marketed a BART general obligation bond?						
Yes	Yes	Yes	Yes	Yes	Yes	No
3. If yes, when, and do you recall your specific advice?						
(a)	All issues, declining marketability	Well secured	1963 "AA"	Bought over \$20MM	Well secured	--
4. Would you amend that advice in light of what you know about BART today?						
No	Yes, down- grade for buyer re- sistance	Yes, lower because of Moody's rating	No	No	Yes, limited secondary (resale) market	--
5. Have you evaluated/marketed tax-supported bonds issued by other public entities in the Bay Area?						
Yes	Yes	Yes	Yes	Yes	Yes	Yes
6. Which specific issues do you recall, and in what year?						
(b) 1954- Present	All East Bay issues	SF-Oakland	EBMUD, SF 1975, various lease- revenues	EBMUD Fremont Newark	(b) 1962-1971	(b) 1922-1966
9. How many people in your firm evaluated Bay Area Securities from 1962-1972?						
5 to 8	3	8	4	6	4 to 8	5 to 8
10. How many years, on the average, did they evaluate Bay Area securities?						
5 or 6	10	10	4 or 5	3	6	5 or 6

(a) No specific recollection.

(b) Too numerous to list.

The entire interview form is contained in Appendix C and the reader should consult it for the full text and context of the interview questions. However, the form of presentation used should obviate the need to refer constantly to the appendix while reviewing the responses presented and discussed here.

Was BART debt given specific consideration in your evaluation or advice on the non-BART bonds? (7) If you just answered "yes", what impact did you attribute to BART debt at the time? (8)

Tabulation:	Specific Consideration		Impact Was Considered to Be		
	Yes	No	Positive	Nil	Negative
	5	2	0	1	6

Detail: All but two respondents replied that BART debt was considered, at least to the extent that it was recognized as a major component of tax-secured debt. One respondent observed that debt attributable to BART was largely discounted until about 1969 or 1970.

Each of the three bond traders replied differently. One reported no effect; one viewed BART's bad press as having a negative impact on other issuers in the area; one saw the level of debt as negative, but he was also the one who perceived the effect to be delayed.

One of the persons who could not recall giving specific consideration to BART debt said that BART's bad press had a negative effect on offerings by others in the general area.

Analysis: BART debt, as a rapid transit issue, aroused no concern related to its transit purpose or likely impact on the region. Those who did take note of the debt did so only because it appeared in the debt ratio, that is, in tax-secured debt expressed as a percent of taxable valuation. About half of the respondents were equally or more conscious that BART's bad press might diminish confidence in the area economy.

With one exception, all of the respondents, professionals in the municipal bond industry, viewed BART as a factor in evaluating debt of other Bay Area issuers. The conclusion appeared in two forms: the traditionalist's view that more debt is worse than less and the pragmatist's view that bad press can only diminish buying interest.

Did you or your firm ever, at any time, prepare a detailed analysis of BART's effect on the Bay Area or Bay Area bond issues? (11) Have you or your firm recently reevaluated BART or the Bay Area Economy? (12)

Tabulation:	Made Detailed Analysis		Recently Reevaluated	
	Yes	No	Yes	No
	1	6	2	5

Detail: One respondent recalled a detailed analysis from early in BART's development. Two recalled a more recent evaluation of BART or its effect on the Bay Area economy, but recalled nothing which changed their earlier opinions.

Analysis: The bond industry does not frequently document its analysis. Reports usually relate to a current bond offering and are prepared for in-house reference. Recent re-evaluations were probably in response to the June 1974 downgrading of BART bonds by Moody's Investors Service, Inc.

Can California issuers expect to pay lower interest costs than issuers elsewhere in the nation? (14) How do California municipal securities differ, if at all, from other local issuers in the rest of the nation? (15)

Tabulation: California Issuers Pay Less Interest

	Yes	No
	7	0

Reasons:

- Californians have high income tax liabilities
- Lower new issue volume per capita
- Large local market for bonds
- Competition among many banks
- Debt is limited by law
- Better than average financial reporting
- Better than average management
- Strong state securities laws
- Local budgets must be balanced
- Comparatively low delinquency rates

Detail: The principal reason for lower interest cost on California bond issues is that California offers a strong market for local bonds. This was expressed in several ways. Four respondents mentioned the relatively high income levels within the state and the high level of income taxation which makes tax exempt bonds attractive. Four referred to the strong market directly, mentioning individuals, banks, and other local institutions as major buyers. Two noted lowered volume. Factors such as strong securities laws, debt restrictions, the local budget law, delinquency history, management and financing reporting standards were mentioned by only those respondents who are not bond traders.

Analysis: Without exception, respondents recognize that California issues pay lower than average interest cost. California's own income taxes make California issues particularly attractive to local corporations and individuals who seek to shelter income.

Are there factors in the local government or economy of California which tend to raise or lower interest costs for California issuers? (16)

Tabulation: Factors which Affect Interest Cost

Lower Cost	Raise Cost
Economic growth/diversity	Lease-rentals
Fiscal conservatism	
Prompt tax collection	
Less complex financing packages ("clean" deals)	
Use of financial advisors	

Detail: Apart from the strong local market for local bonds, noted in answer to the previous question, all but one respondent listed one or more factors in local government or economy which tend to lower interest cost.

Analysis: The reasons given for lower interest cost probably carry little weight outside the California market. The reference to "cleaner" deals may even prove ironic. California lease-rental revenue bonds (issued by nonprofit corporations and joint powers authorities) are usually regarded as complex and highly technical outside California, certainly not "clean" in the sense of simple, direct, or understandable.

Did debt ratios have an adverse impact on BART county issuers? If yes, how do you believe the impact was felt? (17) Do you recall specific issues impacted positively or negatively by BART? (18) If you think the effect of BART debt is unmeasurable or imperceptible. can you suggest why? (19)

Tabulation: Impact Was Adverse Specific Issues Unmeasurable

Impact Was Adverse	Specific Issues	Unmeasurable
Yes	Recalled	Yes
4	3	2
	None	5

Detail: Opinions differ on whether BART debt had a favorable or an adverse impact on other borrowing in BART counties. One respondent believes there was a negative impact only from 1969-1972, a period when BART had an especially bad press. None recalled a specific issue which suffered as a result of BART. Five of the seven respondents felt that BART's impact was measurable, and four of the five viewed the impact as adverse. The four who viewed BART's impact as adverse volunteered that the impact was temporary, and two judged it significant only in lightly developed areas. One trader replied that debt ratios in BART counties were given little heed, unless they resulted in a poorer bond rating.

Analysis: The responses are both diverse and nonspecific. None appears to be concerned about the ability of the BART District to service its bonds. Such impact as BART may have had

on interest costs for other issuers grew out of the debt ratio, which was most swollen in lightly developed areas, and viewed as a temporary condition. A number of respondents appeared disposed to ignore BART debt in evaluating or trading other securities from BART counties. The authors' own experience confirms that BART debt has had no measurable effect on borrowing costs by BART county issuers since 1971.

Was the effect of BART debt ratios offset by a positive market appraisal of BART's economic effect (20), the creditworthiness of other issuers in the BART counties (21), or other factors? (22)

Tabulation:

BART Debt Ratio Was Offset By			
Not Offset	Economic Gains	Other Credits	Other Factors
0	4	7	1

Detail: All respondents said that any ill effect of the BART debt ratio was offset by economic gains or improving creditworthiness. One respondent said that the adverse impact of BART debt was shortlived; all concurred that the impact had disappeared by 1976. Three respondents distinguished between the City and County of San Francisco, whose borrowing cost was never affected by BART debt, and outlying suburban areas, which had to strengthen their credit through population growth and development. One respondent reported short-term reduction in bond buyers' faith from BART's bad press and from the 1974 downgrading of BART's own bonds.

Analysis: The key informants interviewed sensed little impact from BART debt ratios at any time, and appear to disregard BART debt ratios today.

In trying to focus sharply on what did happen, the interview format avoided questions on "what might have happened." The question, "Without BART, would interest rates have been, or be, lower in the BART counties?" was not asked. However, the answer is clear from the replies to the "what did happen" questions. To say that the effect of BART borrowing was slight and short-lived implies that borrowing costs for the No-BART Alternative, the transit system which would have existed today in the absence of BART, would be the same as with BART.

Did you evaluate BART between mid-1966 and early 1969, do you recall the controversy which marked that period, and how did

it affect your evaluation of BART securities and securities issued by other Bay Area entities? (23,a,b,c)

Tabulation:		Evaluated		Recall		Effect on		
BART Bonds				Controversy		Other Issuers		
Yes	No			Yes	No	Pos	Nil	Neg
4	3			7	0	0	4	3

Detail: All respondents recalled the controversy surrounding BART. Mention was made of cost overruns, and a possible shortage of money to complete the system. No one felt that the basic security of BART bonds was impaired. No one felt that the effect on other issuers was significant. Four saw no ill effect on other issuers, three perceived only a slight ill effect. One who noted possible ill effect expressed concern only with respect to utility revenue bonds.

Analysis: Every hint of adverse impact, however slight, has been tabulated. The prevailing view, even among the respondents who sensed an adverse impact from BART's bad press, was that the impact was slight and temporary.

Which one or more of these statement(s) then characterized your evaluation of the 1966-1969 controversy surrounding BART's continued financial soundness? (24)

<u>Tabulation:</u>	<u>Agree</u>	<u>Disagree</u>
Financial controversy cast serious doubt on BART's ability to meet its obligations.	2	
Financial controversy jeopardized BART's ability to complete the system as planned and raised grave concern that BART debt would unfavorably burden other Bay Area issuers.	3	
BART's alleged management problems reduced the realizable benefits of the system.	2	
BART's cost overruns and delays were typical of other large public works projects.	5	
BART would, in spite of cost overruns and delays, have a substantial positive impact on the Bay Area.	4	
The underlying economic strength of the Bay Area outweighed any concern over BART's continued financial soundness.	5	

Agree Disagree

Press and political criticism of a project of BART's size is not unusual and did not affect the financial community's evaluation of BART or its impact on the Bay Area.

2 2

Compared to other economic and political problems in the nation, the BART controversy was only a tempest in a teapot.

1

Detail: The tabulation shows only where actual agreement or disagreement was noted.

One respondent said he might act differently today, since he has learned from New York City's fiscal crisis and subsequent threat of default that there is no such thing as a general obligation bond. His comment was made before the New York State Court of Appeals ruled New York City's moratorium on bond repayment unconstitutional. The respondent's faith may be returning, since that November 1976 decision.

Analysis: The traditional measure of quality for general obligation bonds is the local economy. This measure is reflected in employment diversity, income levels and tax payments, and will be the dominant influence on creditworthiness, unless inadequate legal or managerial controls surface.

In fact, there was vigorous growth throughout the BART development and debugging period, and the bond industry, at least, has no reason to try to evaluate what would have happened without BART. At no point did the respondents react to the 1966-1969 controversy with fear that BART would fail to repay its bonds or that other agencies would suffer in the bond market by virtue of any BART misadventures. Press criticism affected only the secondary market for BART bonds by diminishing interest by individual investors.

Which statements, if any, explain why Bay Area issuers seemed to pay higher interest rates prior to 1969 and lower afterward in relation to other California issuers? (25)

Tabulation:

Yes No

Along with the upgrading of the State of California's rating, a general upward re-appraisal of urban California issuers occurred.

5

Yes No

In the tight money market of 1969, only the most creditworthy issuers came to market, thus the trading index is not a valid comparison.

4

BART's imminent opening caused a significant upgrading of all Bay Area securities.

1

The Bay Area proved unusually resistive to unemployment or other symptoms of economic weakness.

Detail: Five respondents said that the general upward re-appraisal of urban California issues helped to reduce interest costs after 1969. Four of these five also noted that less creditworthy issues were held off the market in 1969.

The reasons given for holding them off include the fact that only the best issues could sell under the five-percent limitation on interest rates then in effect, and many issuers rushed to the market in 1968 to get ahead of a constitutional amendment which would affect public borrowing and was scheduled for a vote in November 1968. BART's impending opening was not noted as a factor in lower interest costs.

Two respondents noted the strengthening of issues offered by outlying areas, reflected both in high growth rates in areas selling bonds, and rapid upgrading of suburban ratings from Baa to A or better. Coincident strength in California credits as a whole and increased investor interest in California tax exempt bonds were also mentioned.

Analysis: One respondent complained that the interview's oversimplified focus on net interest cost tended to gloss over market changes which really accounted for the relative gain of California issues in the marketplace. The changes, according to the respondent, are not evident from figures readily available to the public. This view is clearly supported by the authors' discussions with the respondents and readings in the bond market press.

Net interest cost (NIC) is the final reflection of many market forces. Supply, demand, quality, name recognition, term of investment, and a host of factors which might be grouped under public confidence, all affect the cost of borrowing. BART debt ratios and perceived economic impact are simply two factors. The interviews did not substantiate these factors as sufficiently significant to affect borrowing costs.

The rapid strengthening of suburban credits in the Bay Area is an important factor in the cost of regional borrowing. Some improvement in suburban ratings may have been stimulated indirectly by BART. This is not because of the prospect of BART service, which was a matter of apparent indifference to those interviewed. But BART may have identified comparatively obscure suburban locations with the economic strength of the Bay Area. For instance, the statement that Pleasant Hill is served by the Bay Area Rapid Transit System on a prospectus would establish Pleasant Hill as a proximate part of the Bay Area economy, even for those readers who did not know where Pleasant Hill, California, happens to be.

In effect, BART, which caused little increase in borrowing cost, may have helped to offset its initially adverse impact (consisting primarily of the increased debt ratio), by the perceived effects of economic gains and improvement of creditworthiness for the Bay Area.

Considering the issues raised by this interview, comment on each of the following statements about the 1962-1972 period. (26)

<u>Tabulation:</u>	<u>Yes</u>	<u>No</u>
BART debt initially enhanced local government credit, but problems offset favorable effect.		5 ¹
BART debt, as an infrastructure investment, increased the creditworthiness of BART county issues.	4	
Investment of capital in highways would have had as great or greater a favorable impact.		4
BART debt burdened taxpayers beyond willingness to pay, lowered creditworthiness of BART county issuers.	1	4
BART debt made other Bay Area bonds harder to market.	5 ¹	
BART will improve market for tax supported rail rapid transit bonds elsewhere.	2	3 ¹
Financing community was essentially indifferent to debt levels created by BART investment.	3	4 ¹
Considering 1973-1976, would you respond differently to any of the above statements?	1	4

¹Two of three bond traders interviewed share this view.

Detail: One respondent said that supply and time factors most strongly influence the cost of borrowing; he did not attribute changes in borrowing cost to BART. The four respondents who commented on BART's general effect on Bay Area credit feel it enhanced creditworthiness.

Two respondents noted that San Francisco and Oakland stand on their own credit; neither BART construction nor BART debt were significant in raising or lowering central city credit.

Except for one reply that BART debt temporarily overburdened taxpayers, none expressed the belief that other Bay Area issues were harder to market because of BART. Six of the seven respondents agreed that BART debt ratios had little or no effect on borrowing cost.

Opinions were divided on whether or not the BART experience will affect the marketing of rail rapid transit bonds elsewhere. Three respondents intended to be more critical of such issues in view of BART's experience; two others were hopeful that future builders will learn from BART's experience.

Analysis: The ideas posed in this part of the interview invited expressions of prejudice. Nonetheless, whatever their inner reactions to a given project, the respondents maintain a posture of objectivity in evaluating credits. The most significant answers were those of the bond traders. Any bond trader has a long list of losers, that is, issues he committed to buy, but which he had to sell very close to or even below par value. BART bonds themselves fall into this category, and there are undoubtedly many school district and lease-revenue issues in the BART counties on which underwriters took losses. Still, there is no tendency whatever to use BART or its debt burden as an excuse for marketing losses.

BART may have represented a departure from the usual California emphasis of freeway development, at least as perceived by the financial community. Would you comment on each of the following statements from the standpoint of analyzing or marketing Bay Area securities today?

<u>Tabulation:</u>	<u>Yes</u>	<u>No</u>
BART's centralizing influence made the entire Bay Area stronger economically.	4	1
BART's investment made the Bay Area into a more cohesive, but still dispersed, metropolitan area.	5	2

	<u>Yes</u>	<u>No</u>
BART conferred benefits principally to agencies directly served by the BART lines at the expense of areas not served directly by BART.	1	2
BART was more beneficial to the suburban communities than to the central ones.	3	1

Analysis: Two of the three bond traders viewed BART as a positive contribution to the Bay Area economy or its cohesiveness. Among those with this positive view, three perceive BART as a greater benefit to suburban than to central areas. The answers bear out earlier responses that central city credits are determined by internal economic/ financial factors, and not affected by BART's presence or debt.

Most importantly, the responses here reflect the current view that BART has now become a positive factor in evaluating the credit of suburban areas.

Appraise the effect of BART debt on BART county municipal issuers/NJC bids, year by year. (28)

Detail: Generally, the respondents preferred to state their impressions rather than to diagram them, as suggested in the interview form. Three would venture no estimate at all. Two said there was no effect in 1962 or 1963, with no way to measure the effects thereafter. One, however, thought any effects after 1963 would prove positive; the other thought they would be negative. One trader flatly estimated zero effect on net interest cost. The respondent with the strongest research base ventured that BART never raised net interest costs by more than 10 basis points. However, he views net interest cost as a very unsatisfactory statistic, because it reflects so many factors other than creditworthiness.

Analysis: The responses here add nothing, except to reconfirm that the effects of BART debt ratio and BART development were only briefly, if ever, measurable.

Having observed the BART experience, what would you think if a highly rated issuer announced plans to build a new locally financed transit system? Why? (29)

Detail: One person said he would regard a rail rapid transit system elsewhere as positive if the system was needed. His comment focused on transportation service, rather than method of financing. Six others said they would have to look at the financing to reach an opinion. Heavy reliance on general obligation bonds was viewed as negative in several ways: a

detrimental effect on other securities, detrimental effect on overlapping debt, probably detrimental to the area's Moody's rating. All of the traders now take a negative view toward financing rail rapid transit largely from tax-exempt bonds.

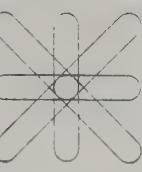
In spite of a generally favorable or indifferent view toward BART's fiscal impact through 1972, the respondents, and particularly the traders, show some coolness toward any future financing of rapid transit through tax-exempt general obligation bonds.

This change in attitude appears largely to have been an outgrowth of two factors:

- The individual investor has assumed a much larger role in providing a market for municipal bonds. Individual investors turn away from projects with bad press, even though the underlying security is unaffected.
- The Moody's downgrading of 1974 contributed to both underwriter and investor losses on BART bonds. Significantly, none of the California-based respondents believe that BART's bonds are any less creditworthy today than when issued, but the traders, especially, are sensitive to the growing difficulty of marketing the bonds.

APPENDIX E

INTERVIEW FORM
POLICYMAKER AND VOTER RESPONSE STUDY
IMPACT OF BART BOND ISSUE ON OTHER PUBLIC SPENDING



POLICY MAKER AND VOTER RESPONSE SURVEY, FEBRUARY 1977

By: Bartle Wells Associates
100 Bush Street
San Francisco, California 94104
(415) 981-5751

PROCEDURE

A number of questions follow. They deal with decisions by policy makers or voters on capital projects. The questions are not intended to be hypothetical; they need to be answered with one or more specific projects in mind. The questions do not seek opinions on what might or should have been done; they address only what did happen as best you recall it. The questions are not intended to be critical of any project or project decision; they will be discussed only in relation to the decision making process itself. Reference to specific projects is made solely to refresh recollection and to locate the decision process in real time.

In most instances, one or more possible answers are suggested. The suggestions are not mutually exclusive; one, two, or more may apply to some extent. If so, please select only the one or two you considered most decisive at the time. The suggestions are not all inclusive. Please ignore answers which do not apply or were inconsequential. Write in, if you will, the answers you recall as really decisive at the time.

Lastly, please don't be concerned with justifying your own or anyone else's decision. Responses will not be published or attributed to specific individuals. Furthermore, the study is not in the least interested in whether time proved anyone right or wrong. The study seeks only to learn why various decisions were made as perceived by people involved. You are being interviewed only because you were in a position to know, or at least to have learned, why particular decisions were made.

QUESTIONS

1. Are you familiar with any decisions made between January 1962 and December 1972, on:
 - a. whether or not to recommend construction of a major public building or other large capital improvements? yes no
 - b. whether or not to submit such a possible project to popular vote? yes no

If your answer to either question is "yes," would you note briefly here:

1. the type and approximate cost of each project _____

2. the decision actually reached _____

3. your responsibility or position at the time either in framing policies or in making or advising on decisions _____

If your answer to both questions 1a and 1b is "no," please note the principal projects in the 1962-1972 period which you have since learned about, if any.

The questions which follow should be answered in the light of what you believe to have happened from discussions with people then involved in framing or setting policies.

2. If the decision was to drop or defer any project or projects, what was the dominant reason for that decision? Answer by noting the name of the project opposite any reason you believe was decisive at the time.
 - a. project lacked broad community support () _____
 - b. costs exceeded apparent benefits () _____
 - c. other projects took priority () _____
 - d. project generated specific opposition () _____
 - e. voters were believed to be unreceptive () _____
because _____

 - f. other: _____ () _____

3. If the decision was to proceed with the project, was the project submitted to vote at a bond election?

a. (project) _____, () yes, () no, when 19 _____

b. (project) _____, () yes, () no, when 19

c. (project) _____, () yes, () no, when 19

4. For each project submitted to a bond vote, please note whether it passed or failed.

a. (project) _____, (passed) ___, (failed) ___

b. (project) _____, (passed) ___, (failed) ___

c. (project) _____, (passed) _____, (failed) _____

5. Reflecting on those projects, if any, which failed at a bond election, which of the following reasons best explain the reason for failure?

a. election campaign () was inadequately financed

() was late in starting

() didn't present need effectively

() needed broader leadership

()

b. project itself () was too costly

() was perceived as of limited benefit

() was opposed because of location or

design

() _____

6.2 other ballot items brought up

(2) fear of expanding government

(c) last minute blitz by opposition

(c) general voter apathy

(c) general resistance to additional tax burdens

d. In addition to the above factors, do you think BART had any significant effect on the election result?

() yes () no, why _____

6. If the original policy decision was to proceed with the project, but not subject it to vote, how was the project financed?

(financing method)

(project)

a. grants _____

b. retirement system loans _____

c. project revenues _____

d. reserve funds _____

e. accumulating cash _____

f. redevelopment bonds _____

g. joint power bonds _____

h. nonprofit corporation bonds _____

i. other _____

7. What was then perceived as the dominant reason for not subjecting the project to a general obligation bond vote? (some of your answers to Questions 3 and 5 may apply here also)

a. (Project)

(Reason)

b. Do you recall any specific consideration of BART as a reason for or against holding a bond election?

() yes, () no, what effect did BART have on the decision?

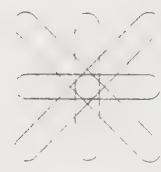
On behalf of the U.S. Department of Transportation (which is financing this study), the Metropolitan Transportation Commission (which is managing it), McDonald & Grefe, Inc. and ourselves (the contractors), we thank you sincerely for your time and thought.

BARTLE WELLS ASSOCIATES
Raymond K. O'Neil

APPENDIX F
LIST OF PROSPECTIVE INTERVIEWEES
POLICYMAKER AND VOTER RESPONSE SURVEY

TO: File 154B
FROM: R. O'Neil
SUBJECT: BART Fiscal Impact Study
Voter/Policy Maker Response Study
LIST OF PROSPECTIVE INTERVIEWEES
DATE: February 2, 1977

Person	Function & Address	Special Focus
<u>San Francisco County</u>		
John D. Crowley	Public Utilities Director City & County of San Francisco City Hall, San Francisco	Present attitudes of city policy makers on voted vs. non-voted bond issues.
Terrence Comerford	Financing advisor to city Blyth Eastman Dillon 555 California St., #4300 San Francisco	SF Muni Railway Improve- ment Corporation issues of 1969, total \$17,000,000
<u>Alameda County</u>		
William Hanley ¹	City Manager, formerly of Berkeley, now of Hayward City Hall, Hayward	BART Special Services Dis- trict No. 1, \$12,000,000 bonds of 1968, Hayward City Hall Corporation bonds
Donald Dillon	Former mayor & councilman 4-Winds Nursery Fremont	Fremont City Hall Corpora- tion bonds
Jack Maltester	Mayor, San Leandro City Hall, San Leandro	General voter response in level tax-rate community
<u>Contra Costa County</u>		
Robert Schroder	Supervisor, formerly mayor & councilman in Walnut Creek County Administration Bldg. Martinez	Walnut Creek Recreation Facilities bonds of 1967; Aquatic Facilities bonds of 1971
John de Vito	General Manager, Contra Costa County Water District, Concord	Evaluation of voter response since 1962



Person	Function & Address	Special Focus
Lee Walton ²	City Manager of Martinez, formerly of Pleasant Hill	Pleasant Hill Civic Center Authority bonds, voter response in Martinez, a non-service area
Thomas Berkley	Attorney, Oakland Port Com- missioner 630 - 20th Street, Oakland	Oakland voter response
<u>Santa Clara County</u>		
James Pott	Transportation Agency Director, formerly Director of Public Works, 1555 Berger Drive, Santa Clara	Santa Clara County \$50 million in lease revenue financing, and County High- way bond issue of 1962 ⁺
Donald Currin	Formerly with Santa Clara County Flood Control and Water Conservation District	Evolving voter response to utility issues

Marin, San Mateo Counties

No interviews planned.

1 - Alternate: George Oakes, former mayor
1100 B Street, Hayward

2 - Alternate: James Alkire, City Manager
Pleasant Hill

APPENDIX G

IMPACT OF BART ON BAY AREA
PUBLIC FINANCING ELECTIONS

EVAN R. PETERS

POLICYMAKER AND VOTER RESPONSE SURVEY

REPORT from

EVAN R. PETERS

Public Relations Consultant

3769 JACKSON ST. 751-5889
46 CALIFORNIA STREET • SAN FRANCISCO 4, CALIFORNIA • ~~SUN 1-1329~~

To: Mr. Raymond K. O'Neil

DATE: 11/29/76

FROM: Evan R. Peters

COPIES TO:

SUBJECT: Impact of BART on Bay Area Public Financing Elections

Comment: I have been an independent public information consultant and election specialist for the past 25 years. During that time I have participated in more than 100 elections concerned with public financing, involving about 120 financing proposals, totaling approximately \$675 million.

Since voter approval of the BART bond proposal in 1962, I have not been aware that this public indebtedness had any influence on the decisions of Bay Area public agencies regarding submission of financing measures to voters, or that the effect of this bonded indebtedness on tax levies had any impact on voters' decisions at the polls.

A brief analysis of some of the bond propositions with which I was engaged, and my opinion of the reasons for voter actions, follows herewith:

Napa Municipal Sewer District--Napa County--February 25, 1964

\$7.7 million in general obligation bonds for sewerage facilities, with 66-2/3 percent approval required. This measure lost, receiving only 42.7 percent. Financing of sanitary sewers and storm drain facilities were combined in the same measure and this was confusing to the voters. Some months later, a proposal confined to sanitary sewers was submitted and received in excess of the needed two-thirds majority.

Contra Costa County Water District--March 9, 1965

\$14.5 in revenue bonds for improved water facilities. Although only a simple majority was needed for approval, the measure received 77 percent. There was no organized opposition and the electorate was made well aware of the need for the improvements.

City of Fremont--Alameda County--April 20, 1965

A referendum on a \$1 million lease-purchase financing proposal for a new city hall. Only a simple majority was needed. The proposition received 58 percent approval, in spite of a militant opposition claiming the new civic center was a luxury, and not needed.

City of Concord--Contra Costa County--May 5, 1965

\$3.2 million in general obligation bonds for parks and recreation facilities. After having failed to gain two-thirds majority in two previous elections, this time the concerted efforts of PTA's and Parents Clubs achieved a 77.5 percent majority.

City of Walnut Creek--Contra Costa County--October 5, 1965

Two financing proposals were on the ballot--\$1,500,000 in general obligation bonds for parks, received 84.5 percent approval; the other, \$5,370,000 in general obligation bonds for street improvements, also received 84.5 percent "yes" votes. The campaign was well-organized and widely supported throughout the city.

Contra Costa Junior College District--March 29, 1966

\$55 million in general obligation bonds for campus buildings. This was the largest bond proposition ever submitted in Contra Costa County. Although the measure received substantial majorities in the east and central county areas, racial disturbances in the Richmond area in the west county had a negative effect, offsetting the favorable vote in the other sections of the county. The measure received 62.3 percent, short of the required two-thirds, but of course a very substantial majority.

City of Concord--Contra Costa County--December 5, 1967

\$11 million in general obligation bonds for street improvements. Supported by the business community and every section of the city, this measure won with a 78.4 percent majority.

City of Pleasant Hill--Contra Costa County--June 4, 1968

\$3,350,000 in general obligation bonds for street improvements. This was the first bond issue to be considered by a community which had been incorporated only seven years before. The substantial 74 percent "yes" vote indicated strong citizen support.

Mountain View Sanitary District--Contra Costa County--June 4, 1968

\$750,000 in general obligation bonds for improved sewage treatment facilities. This small district was determined to maintain its complete independence from the neighboring City of Martinez, and gave the bond proposal a 72 percent majority "yes" vote.

Stege Sanitary District--Alameda County--November 11, 1969

\$2 million in general obligation bonds for sewerage improvements, largely to pay for connecting the system serving the El Cerrito area to East Bay Municipal Utility District's facilities, to meet state water quality control standards--78.3 percent majority approval.

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